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ASSISTANT EDITORS,

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Saturday, September 1, 1849.

Iron Ores and the Iron Manufacture of the United States.

Continued from page 529.

NEW YORK

Other Veins of Putnam and Orange Counties.—Since my examination of the veins of iron ores in Putnam and in Orange counties, some further developments have been made, which add no little to the known mineral resources of this region.

The first of these is the discovery of another vein of magnetic ore, near that of Simewog Hill, in Southeast, described on page 511. It is between 2 and three miles from the Harlem railroad towards the Hudson river. The vein is described as being much larger than that of Simewog Hill, and affording ore of similar quality and excellent appearance. From its abundance it is thought it can be mined and put on the railroad as cheaply as that of the vein crossed by the railroad. A considerable quantity was taken out last winter, with the intention of being carried to Boston, to be used in the puddling furnaces of the Massachusetts Iron Company. These, however, supended work before the ore could be forwarded. It is probable the iron ores of this vicinity will ere long prove a considerable source of revenue to the Harlem railroad by the additional transportation they will create.

The *Cronkite* mine in the highlands has been known for many years: but its importance has only been lately developed by the enterprise of Mr. Wm. Bushnell of Poughkeepsie. It is described by Prof. Mather in the State Geological Report, as situated 4½ miles southwest of West Point—that there were two veins separated by a sheet of rock, and traced 50 to 80 rods in a NNE. direction. It had furnished 800 tons of rich ore some 35 years previously, and this had been proved to be of superior quality. The veins were found to vary from a few inches to ten feet in thickness. Their dip was 70° towards the WNW.

In making some experiments last year as to the promise of the mine, it was discovered that the two small veins formerly wrought were but prongs of a very large body of ore, which had not before been known. The two small veins, and two other newly discovered, nearly parallel to them, projected out from this body towards the southeast somewhat like fingers from the hand, and between them were interposed gneiss rock. One of these newly found fingers, or prongs was no less than 16 feet thick, and the main body 25 feet. The ore throughout this great thickness is rich and of an excellent character of magnetic ore. Its structure is columnar, like most of the ore of Orange county and of New Jersey; and at the surface this tendency to separate into columnar fragments affords no small facility in mining, the cost of which is now only 40 cents per ton.

Operations having been but lately commenced, only about 700 tons of ore have been extracted; but the condition of the vein is such, that any amount required may be obtained; for there is sufficient room for working large numbers of miners; and the high elevation of the bed above the drainage around will always keep it free from water. The ore is taken by a road of easy down grade to the river, a distance of three miles, at an expense of about 75 cents per ton. The other expenses of handling and freight to the other side of the river at Poughkeepsie, are 28 cents. It is used mixed with the Fishkill hematites in about equal proportions of each; and the iron produced is highly esteemed for foundry purposes. There has been no occasion yet to test its qualities for puddling, though there seems to be no reason to doubt it should equal other forge pig made of similar ores. The furnace is now running at the rate of about 13 tons a day.

From the great dimensions of this bed of ore it is evident it may safely be relied on for enormous supplies; and to obtain them so near the Hudson river must certainly be regarded as an extraordinary piece of good fortune. It is well that this has fallen into hands, that will not allow the ores to lie like those of the Forest of Dean mine, (which is on the same range, but farther back from the lake), of no use to their owner and none to the numerous persons, who might derive support by the working of the mines and the smelting of the ores. The estimate I have given of the cost of making pig iron from the Forest of Dean ores on the river will not vary essentially from one applied to the ores of the Kronkite mine.

Mr. Bushnell has also discovered another vein of magnetic ore, a mile nearer the river, which he has opened and proved to be 12 ft. thick. This was not noticed in the State Geological Reports. A third vein he has obtained is in Butter Hill Clove, opposite Breakneck, three-quarters of a mile only from the river. The vein is 3½ feet thick and the ore is good. All these mines are very advantageously situated above the water courses of the vicinity; so that no expense of drainage will be incurred.

In the course of the coming winter, I trust I shall be able to present to the readers of the Journal a more detailed account of the mines and furnace operations of Mr. Bushnell.

Staten Island Ore Beds.—From New Brighton to Richmond is a range of hills composed of serpentine, which extends in a northeast and southwest direction through the centre of the island, and forms its most elevated portions. The serpentine is much disintegrated, and is very subject to crumble away on the surface. Over large areas the rock is sometimes exposed in this loose state, giving an aspect to the region like that of the "Bare Hills" about Baltimore, which are composed of the same material. On the serpentine, and forming superficial deposits in it, are varieties of hydrous peroxide of iron, and sometimes some spathose proto-carbonate, like the carbonates on the shores of the Chesapeake. The hydrous oxides seem to be formed from the decay of the rock and the removal of its magnesia—oxide of chrome being found as one of its constituents

adds to the probability of this being the case. The silica of the serpentine frequently remains behind with the oxide of iron—the two mechanically mixed forming a refractory ore, too poor to be of any economical value. This variety is found almost everywhere over the surface of the serpentine; some of it has the appearance of pot-metal, and rings like a bell; some of it is cellular, the cavities lined with small crystals of quartz. Scattered over the surface are found loose pieces of purer ore, as hematite, equal in quality to the best hematite of the Housatonic valley; but no where do these pieces lead to any extensive deposit. So numerous are they, however, in many places, that one is strongly disposed to attach much importance to them, and to be unwilling to admit, that they cannot be procured in large quantities. The various forms of stalactical, mamillary and botryoidal structure are often as beautifully exhibited in these scattered fragments, as in the most extensive mines of the ore. Another very unusual form of hydrous peroxide of iron, or hematite, is found in larger deposits. It is of oolitic structure, formed of rounded grains, like shot, set in a ferruginous paste. The lumps, of all sizes less than a man's head, lie packed away closely together, with little foreign matter, or they are mixed with large quantities of ferruginous earth, from which they require to be screened. The whole rests either as a stratum of varying thickness upon the surface of the serpentine, or occupying a large nest in the soil, which rests upon the rock. Near the Moravian Church, on the road to Richmond, about four miles from Stapleton, is a large exposure of the ore covering the greater part of the bare hill. The rains have cut deep gullies through the deposit into the serpentine, and exposed the thickness of the ferruginous stratum. In the deepest place, this does not exceed six or eight feet, and towards the top of the hill it rapidly diminishes to nothing, the underlying serpentine coming to the surface. Several hundred tons of the ore have been taken away at different times. Five hundred tons were carried two years since to a furnace near Philadelphia. I had occasion to make a careful estimate of the quantity, which may be reckoned upon at this locality, supposing the ore does not cross the road. Several pits were sunk in different places on the hill, and making a fair allowance for the large quantity of dirt intermixed, I concluded 10,000 tons of ore might safely be relied on. An analysis was made by Mr. Hayes of a mixture of good and inferior pieces—designed to represent, as near as might be, the average of the fragments—with the following result:—

Water	12·00
Silica	11·60
Chrome iron	3·76
Alumina, phosphoric acid, and Manganese	.50
Per oxide iron	72·04
	99·90

Iron—50·43 p. c.

The analysis gives no ingredient, that would be likely to injure the ore. Properly treated with other mixtures, it could hardly fail to work easily and might make good iron.

This same variety of ore is found more free from foreign matters, and in a more compact body, at Dongan's farm, on the western slope of the island, about two miles back from Port Richmond. Here in a cultivated, level field is a large pit, from which it would seem that several thousand tons of material must have been removed some years since.—The walls nearly all around this pit, so far as they are exposed down, which is six feet or more, are seen to be made up of balls of ore; these can be rattled down with a pick in great abundance. In the bottom of the pit, at least 14 feet below the surface, ore was found in a small hole dug to prove the ground Rocks of poor siliceous ore lie in one portion of the large excavation. What the quantity of good ore may be beyond the present limit of the pit, can be determined only by following the deposit beneath the surface. The character of the ore is like that of which the analysis is given above.

Surface indications of this ore are met with in various places on the range of the serpentine; but. nowhere has it been so abundant as in those cited. That it will ultimately find a market in connection with the other ores of the vicinity of New York I cannot doubt; and I do not know but enough of these are now known to warrant the establishment of a furnace on some convenient site on the shore of New York harbor for their reduction. The magnetic ores and hematites of the highlands may be brought to meet the ores of Staten Island; and the time will come when the cinders about the numerous forges and cupolas will be thought worth gathering for this purpose; and the easily melted green sands of New Jersey will be brought to add their twenty per centum of iron and ten per centum of potash flux, to aid their reduction.

It is a curious fact, that the title to the minerals (except gold and silver), lying beneath the rich lands of Castleton on Staten Island, has never gone from the heirs of those, who first held the patent of the manor, granted about the year 1690.

IRON ORES OF LAKE CHAMPLAIN DISTRICT.

The largest district of iron ores in the State of New York is in the great tract of primary rocks, bordering Lake Champlain on the west, and stretching to the northern limits of the State, and westward to the river St. Lawrence. With its cold climate, its mountainous and rocky surface, this region has very little inducement, besides its rich mines of iron ore, to offer to the settler. Among the head waters of the Hudson lie the Adirondac Mountains, the highest and most alpine group of mountains in the United States. For tho' in some other States there may be higher peaks than that of Mount Marcy, (as Mount Washington in New Hampshire), there is no district, it is believed, of the extent of this, whose general elevation is so great; and in few are found summits so high.—According to the barometrical observations of Prof. F. N. Benedict, made with great care, the height of Mount Marcy is 5337 feet above tide. Around this summit, covering in all an extent of about 10,000 square miles, are groups of wild mountains interspersed with lakes and streams. Sheets of water, half lakes, half-rivers, wind around the hills, their currents pursuing a devious course, some towards the river St. Lawrence, some towards Lake Champlain, and some to form the Hudson. At an average elevation of between two and three thousand feet above the sea, this region possesses as cold a climate as any in the country; and in the summer season among its wild haunts and grand scenery may be found cooler and more healthy retreats than any where else within the same distance of our large cities; where at the same time the woods more abound with moose and deer, and the ponds with trout.

The little village of Adirondac, (or McIntyre, as it was formerly called,) situated in the midst of these mountains, nearly fifty miles back from Lake Champlain, is the best point from which to make excursions among the mountains, or to examine the enormous beds of iron ore in its vicinity, which are among the most extensive of any in the United States. From this point to Lake Champlain, the magnetic iron ores are of frequent occurrence. They also extend south into Warren county, and north and west into Clinton and Franklin counties. In St. Lawrence county the ores partake more of a specular character, though in its southeastern part, the magnetic variety also occurs.

It would be useless, were it in my power, to describe all the known localities of iron ore in this extensive territory. I shall limit myself therefore, with few exceptions, to those which have come under my own notice, and have been already proved, and promise to be of considerable importance. A large number of them are made use of only by forges, and as these are estimated to consume no less than 50,000 tons in Essex and Clinton counties, they will demand some notice, though I am not provided with very complete data concerning them.

In *Franklin county* I have no particular account to give of the mines. They are found far in the interior, in a rough and little cultivated region. The ores are rich and pure, of the magnetic varieties.—Some time since they were the cause of no little excitement, from the fact of steel having been made directly from them. But this proved to be a matter of no particular consequence, and indeed it was nothing new, as steel has been made directly from magnetic ores before. No dependance can be put upon the process, as in the deoxidizing and carbonizing, there is no certain way of controlling the operation, so as to insure any particular quality of steel, or indeed that the result may not be high iron or even metallic iron. The small furnace in operation here is called the *Duane Furnace*.

The steel engraving of the Cliff mine of Lake Superior, which we enclose with the paper of this week, has been in consequence of an accident kept back after the time it should have appeared with the article to which it belongs.

The sketch was taken on the spot, and afterwards painted in oils by P. Harry, Esq., now of Binghampton New York, and is a faithful representation of the mine, as it appeared at that time. Great improvements and alterations have since been made upon the surface; but the chrracteristic features of the trap ridge, the peculiar break in it, and the structure of the rock, which are here very correctly delineated, remain unchanged. The amount required to execute this engraving was liberally furnished me by the Directors of the Pittsburg and Boston Mining Company. H.

Copper Ores of Lake Superior.

Continued from page 529.

MINESOTA MINE.

This mine presents some of the most interesting features of all the extraordinary mines hitherto opened on the shores of Lake Superior. It is situated two miles south of the Ontanagon River, 20 miles above its mouth—in a straight line only about 12 miles. The trap range crosses the river in this vicinity; and its hills are as high and precipitous as on Keewena Point. As there, however, they afford on their more gentle slopes, south of the principal range of hills, tracts of great fertility, on which thrives a beautiful growth of sugar maple, birch and oak and other hard wood, intermixed with magnificent white pines. The mine now worked is on the southern slope of the northern of three parallel ridges, which here constitute the trap range. Here, though nearly up to the summit of this ridge, the surface inclines gently, so that the land around the mine is cultivated and occupied by the houses of the miners. So unbroken is the surface in general, the

vein would probably have remained long undiscovered, but for some curious ancient diggings, which even in the thick woods could not fail to arrest the attention of one passing over them.—They consist of lines of pits, now partially filled with rubbish and overgrown with trees, which pursue a course parallel with that of the ridge itself—North of East and South of West. This course is at right angles to that of the veins on Keewena Point. The walls of the pits are ledges of amygdaloidal trap, evidently the walls of a vein. They incline in towards the axis of the ridge, the dip being about 55° North.—They may be traced with other indications of the vein for more than two miles in length; the actua extent of the workings themselves may not exceed half a mile. Their depth down to the rubbish does not exceed ten feet; how much deeper this may reach I cannot tell. In one instance I observed an arch of rock left standing, under which the unknown ancients had prosecuted their work along the vein. In the rubbish are found stone-hammers or picks, one end shaped like a wedge, the other rounded.—A groove passes around them, as if for a withe to bind them to handles. They are of various sizes; some so small a boy could pound with them; others would seem to have required two men to use them. They are generally made of the hardest kind of greenstone trap, such as is found directly about the mines. The quantity of them is so great, that as I was informed by Mr. Knapp, the agent of the company, many cartloads of them might be collected around the pits. Most of them are broken on the edge, as though used and then discarded. Two copper gads or wedges have been found, but excepting these, no other tools than these stone picks. These were each about 2½ inches long; one was a spike with a square head, the other a socket chisel. They are now with other relics in the possession of Wm. Hickok, Esq., 239 Water St., New York, who transacts the business of the company in this city. The use of iron seems to have been unknown to these miners. How their rude instruments could have been used to any effect in breaking down a rock about as hard as themselves—so hard that two good miners will be several hours in putting in a hole two feet deep with the best steel drills and mallets, and so tied together frequently with masses of copper that the drill will not penetrate, or if it penetrates, the powder will not break the rock—how such tools could have made way through it is more than we can comprehend. Possibly by the aid of fire the rock may have been rendered more brittle and easier to be removed;* but so slow and tedious must have been their progress the copper was necessarily of more value to them than gold is to us.

From the extent of their operations it seems that these ancient men must have had excellent success at this locality; and much credit is due them for their skill in discovering so rich a vein so far back in the woods—if indeed the region was then as wild and untrodden by human feet as it now is.

In one of their pits, twelve feet below the surface, they encountered a mass of copper too large for them to remove. From under the rubbish of centuries it has again been brought to light, and with it the evidences of their unsuccessful toil. The ancient miners had succeeded in taking the mass out of the solid vein stone in which it originally lay, and in raising it about a foot upon two *skids* or timbers, one of oak and one of birch. These were found in tolerably good preservation, the wood, of which I have a piece before me, being partially converted into lignite. Some ashes were found under the gavel near the mass of copper. This mass they had worked over with their stone hammers, till they had removed every particle of veinstone, that adhered to it, and filled its ragged interstices. This appears to have been done for the purpose of lightening it as much as possible. But it was still heavy enough to defy all their exertions: and having now been taken out and cut up, it is found to weigh 6 tons, 5 cwt. and 47 lbs. The bottom of this mass was about 25 feet below the surface; almost directly under it was the rich stamp work of the vein; over it had accumulated about 12 feet of gravel nearly filling the pit—and on this gravel were standing large hemlock trees, one of which, considerably smaller than some of the others, presented 397 rings of annular growth; and others also evidently still older lay rotting on the surface of the gravel. It was thought by men of good judgment in such matters, that the vegetable growth indicated at least 500 years since the pits were filled—and for the period of the ancient mining we must add to this the time taken for the gravel to slowly collect by natural causes to the depth of more than 12 feet; for we can hardly suppose these long lines of pits were filled by any other agency. The above data were given me by Mr. Hickok, who was upon the spot at the time the mass was found, and who can be relied upon as one careful in forming and expressing an opinion.

There is no evidence that the present race of Indians have made use of copper, or have known any thing whatever of mining. These relics appear to have belonged to a more civilized people, and yet to one, who knew not the use of iron.—For where mining operations have been conducted, as we know, by the English and French, nearly two hundred years since in this very region, iron tools are found in confirmation of the records. There was once a people on this continent, who are known to have had copper utensils and to have attached a value to them. These instruments are still found in their mysterious mounds of the Western States; and associated with them are various articles most skillfully and ingeniously made, and which would seem to have exacted as much patience in their fashioning, as these curious stone hammers and the work accomplished by their use. According to the researches of Messrs, Squier, and Davis these "mound builders" were more numerous on the banks of the Ohio than our own people are at present. They evidently spread over a large territory. I myself have seen their mounds, and opened one on the banks of the Wisconsin River. Previous to the publication of his work by the Smithsonian Institution, Mr. Squier handed me a copper axe or chisel he had found in one of the mounds, that I might test it for silver, or discover if possible any other evidence of its having come from the mines of Lake Superior. It was six or seven inches long and about half as broad; one end was brought down to an edge. It appeared like a piece of native copper roughly hammered into this shape. No silver was attached to it, nor is it generally to the copper of these mines; it is rarely found in the copper, and not at all to my knowledge alloyed with the masses.* The copper was very pure like the generality of this metal from the Lake. The fact of finding such utensils in the mound, connected with the ancient excavation of these mines—like the mounds themselves evidently the work of a very laborious as well as skillful people—is strong circumstantial evidence that the mound builders had penetrated even to the shores of Lake Superior, and had understood and developed the resources of the country as much almost as we at this day. For it is not only at this point that vestiges of them are found, but so far as we have now traced these mines, even to the distant point of Isle Royale, so far had they known and worked them. It is to be regretted no skulls have been met with, as they would at once determine whether these works are to be attributed to the Aztec race or some other more recent people. The only human bones yet found in these pits are those of the arm, which were colored green by the action of the copper. It is to be hoped these may prove a forerunner of more important relics.

I have already considered the subject of the different bearing of the veins of this region from those of Keewena Point—their running *with* the ridges and *with* the belts of rock, instead of *across* them; and have been led to attach a greater importance to

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* It is known that in very ancient times fire was used for this purpose such being suddenly heated expands and cracks; and then by throwing on water it will in suddenly contracting open in fissures of greater or less depth affording an entrance for picks and wedges. Diodorus of Sicily gives some interesting details of these ancient operations. He observes between Egypt, Ethiopia and Arabia is a plain filled with metals and particularly with gold, which is extracted with much labor and expense; for the rock, black and hard by nature, is intersected with veins of very white and brilliant marble (quartz), which surpasses in lustre the most glittering substances. Here are employed great numbers of workmen. The King of Egypt often sends to the mines those convicted of crimes, together with all their families, as also prisoners of war and those who have incurred his displeasure, or who have suffered from any accusations, true or false—in a word all condemned to prison. By this means he draws large revenues from their punishment.

These numerous unfortunate people are chained by the feet and kept at work incessantly without any chance of escape; for they are guarded by foreign soldiers who speak strange languages. When the rock, which contains the gold is very hard, they soften it first by fire, after which they break it by heavy blows of picks or other iron tools. They are directed by a captain, who knows the veins of the mine.—The strongest among them break the rock with heavy blows, this work requiring strength only and no skill. As in following the veins it is necessary to make many turns, and the subteraneous passages consequently become very crooked, the workmen who otherwise could not see clearly, carry lamps attached to their foreheads; changing their position as often as the nature of the place requires, they make the blocks of stone they detach fall at their feet. They work thus day and night, driven on by the cruies and blows of their overseers. Young children enter the crevices made in the work, and take out the little bits of stone they find, which they afterwards carry to the mouth of the mines. Men of 30 years of age take a quantity of them and pound them with mortars in iron pestles, till they are as fine as grains of millet. Women and old men take this reduced stone, and put it in mills ranged along in order; then two or three working each mill, they grind the measures given to them as fine as flour.

A similar use of fire is still continued in some mines of Saxony and Hungary. A rectangular box of cast iron is employed nearly as large as the level, the opening of which, where the flame comes out, is opposed to the wall to be attacked. This opening is five feet long and 16 inches high; but the roof of the box slopes back, so that the opposite edge is only 10 inches high, The bottom is a grate on which is laid the fuel. The flames pour over against the wall of the mine, serving to weaken it and render it easy of attack with picks and wedges. Of course such a mode can only be adopted where the ventilation is perfect.

* I have just been informed by Dr. J. L. Le Conte of this city, that Mr. Squier exhibited to him specimens of native copper, with small particles of silver attached to them, which he had found in the mounds. This must be considered as pretty conclusive evidence as to these mining operations being the work of the "mound-builders."

them for this reason. For while their production does not seem to be diminished by this change of direction, the veins are longer kept in the productive belt, which is the amygdaloidal trap. Thus the principal vein of the Minesota, which is found in this rock, running with its strike and underlying with its dip, has been traced as I am informed by good authority, more than two miles. indeed has been worked on a considerable part of this distance by the ancients; while of the best veins on the Point, no one would be authorized in saying, they could be followed in the amygdaloid a quarter of a mile.

Accompanying this change of direction is also a change in the prevailing vein stone; which is here epidote instead of quartz. But associated with the epidote the same minerals are found, as quartz, laumonite, chlorite, calc-spar and prehnite, which characterize the veins on the Point. These differences of direction and composition do not appear to be connected with any change in the metalliferous character of the lodes. They abound alike with native copper, with which native silver is sparingly disseminated.

Many parallel veins of similar features are known on the three ridges of this tract, which is three miles long in an east and west direction, and a mile and a half wide; being the northern half of the lease numbered 98. Only one of these veins will require particular notice at present. It is the one described as having been so extensively wrought by the ancient miners. Still some of the other veins are not inferior to it in this respect; but they have not yet been followed up as this vein has been. The present workings were commenced last year, so that it cannot be expected, that much more should be done than clearing the land, building houses and commencing mining. Two inclined shafts have been sunk among the old pits, 150 feet apart, following down the slope of the vein, which is about 55°. After getting to the vein under the masses above described, it was found to contain copper interspersed through the veinstones, and a considerable quantity of good stamp work was obtained.—But at the depth of 35 feet, large masses of copper were struck, which rendered it necessary to continue the work under them, leaving them as a hanging wall. A level was then run, connecting the two shafts, through the underlying amygdaloid.—The copper wall on one side continued all this distance, its height from the floor to the roof being about eight feet, and its limit in neither direction being exposed. Much of the way it shows a clean face of copper, and this is then hidden by a scale of stone, which clings closely to it. This does not appear to exceed an inch in thickness: in many places, I struck through it with my hammer, and in others drill holes an inch deep exposed the copper beneath. I am not aware that any point has been found in this whole length of 150 feet, which indicated a break in the copper. Of course it is not doubted, but that there are such, the masses that have been found in the Cliff mine generally overlapping each other, and always separating into fragments never exceedding 60 to 80 tons in weight.

What the thickness of this mass or range of masses may be, had not been fully ascertained when I was at the mine. At the foot of one of the inclined shafts, there was a partial natural opening which had been cut quite through. But here the masses projected in huge prongs, which interfered with any accurate measurement. But the whole distance from outside to inside of these prongs was no less than five feet. From these data of course no calculations can be made of the quantity of copper in sight, for the thicknes of these masses is very variable; and there is no certainty that even one foot can be relied upon. At the Cliff mine the greatest thickness of solid copper has never exceeded three feet. Supposing for a moment this should average one foot, there are then exposed in this level 1200 cubic feet of copper:—or allowing four cubic feet to the ton, 300 tons. I should be extremely unwilling to say that it was ever likely to produce the half of this, without a much more thorough examination. So much as I have seen is certainly very astounding, and almost enough to lead me to doubt the correctness of my own observations: and I should hardly have ventured to publish them, had I not subsequently to my visit at the mine in June last, asked of others, who had seen it, their opinions also, which I always found agreed with my own.

To work around such a mass of copper and cut it up, much time will be required, and heavy expenses be incurred. This new kind of work is now pretty well understood at the mines, and men have become skillful in the novel trade of cutting copper. It is done with large cold chisels, one man holding and another striking as in drilling.—A chip three-quarters of an inch wide is run through across the weakest places, then another in the same channel, till the mass is penetrated. The work is worth from $8 to $12 for the superficial square foot exposed in the cut. Before this work is commenced, the mass is shattered as much as it can be, by heavy sand blasts of powder put in behind it. Late accounts from the mine represent that a portion, estimated to weigh 25 tons, has been thrown down in this manner, which they are now engaged in cutting to pieces. No mention is made of the thickness.

A machine is much wanted, and will yet be introduced to do this work of cutting copper more expeditiously than it can be done by hand, and the successful inventor will make his fortune by it.—Saws have been tried, but they work slowly through, and are injured by the fragments of quartz and hard trap rock, which are encountered in the copper. A series of hard chisels, arranged so as to be easily replaced, and follow close upon each other like the teeth of a circular saw, but with great force, seems to be what is required. Were the machine so cumbersome, that it could not be brought to bear in the mine itself, it might still be of great service in subdividing masses of five to nine tons, taken out by machinery from below.

This mine is connected with the Ontanagon river by a tolerably good road of easy down grade only two miles long. From this point the copper is transported to the mouth of the river in boats, at two dollars per ton, contract price, which renders the cost of putting the copper on shipboard little if any higher than from the mines on the Point. In an ordinary stage of the river, the boats carry down thirty tons each. Within the mouth of the river is a good harbor for schooners, capacious and deep, and docks are already built for the accommodation of vessels. Larger vessels and steamboats cannot come over the bar with safety until it has been deepened—a work which will probably be done by Government.

There have already been sent down to New York about ten tons of copper; and it is expected from 50 to 80 tons more will be shipped this fall. A steam engine has been sent up, which is to raise the ore and water from the mine, run the stamps and a saw, intended to supply wood and square timber. About seventy men are now employed, and the force will be increased as accommodations can be furnished. The work has so far been conducted with excellent judgment and economy by the agents of the company at the mine, Messrs. Roberts & Knapp.

In closing the account of this mining tract, on which the vein described is but one of several others of similar external promise and but one of very many others within the range of a few miles of the same outward show—including even in some instances the ancient workings—it will be well to refer to the opinions I have before expressed, as to the productiveness of the copper region, and the probability, that copper will soon become with us an article of export rather than of import. The Cliff mine is sending down this season about 1000 tons like the 830 tons of last year, which averaged 60 per cent. of copper; this is equivalent to 600 tons of metal. It is certainly not unreasonable to expect that the Minesota mine in two years should do as well.—Several other mines I have described are fast becoming productive; and others still are in an earlier but hardly less promising stage of their development.

In the Custom House returns for the last few years, the importation of copper and copper ores has been about the value of $2,000,000 per annum. This is equivalent to about 6,000 tons of metal—one tenth part of this is now furnished by one mine, which four years ago was hardly known. There are certainly now full seven or eight more, which present as good a prospect as did the Cliff mine the first year it was worked. The stimulus its extraordinary success, and that of the Minesota must create, will rapidly hasten the full development of these seven or eight mines and others also; and it cannot be long before this 6000 tons of copper is sent down the lakes, and we are independent of all foreign supplies. The next effect must be that our mines will prove serious competitors to those, which have hitherto supplied us with copper from ores averaging only from 7¼ to 7¾ per cent. of metal, which is the rate all ores are brought to before going into the furnaces at Swansea. I cannot, therefore, but regard this region of immense consequence to us, and worthy the fostering care of our Government. Its harbors demand improvement, the expense of which private enterprise cannot be expected to meet; and a ship canal past the Sault Ste. Marie is essential for ready communication in the short season, when transportation is practicable;—and the construction of this falls wholly in the province of Congress to authorize and accomplish.—This subject will receive farther attention at a future time.

H.

Irish Peat.

In the course of the debate in the House of Commons, on the 27th, on the Irish Poor Law Amendment Bill, Mr. O'Gorman Mahon read the following letter from Mr. John Waters, M. D., a distinguished chemist, residing in South Crescent, Bedford square, London:

"I beg to acquaint you that a discovery has been made in Ireland, which will materially enhance the value of landed property in that country. It consists in the aptitude of its millions of peat acres to produce, at trifling expense, little more than that of manual labor, oil naptha, napthaline, parafine, muriate of ammonia, viccomar, pittical, candles, pitch, tar, and other principles, by a new process of distillation. These several materials were submitted to me some months ago by Mr. Owen; and from what I have seen and tested, I have no hesitation in pronouncing it one of the greatest discoveries of the age, and one which will become a source of unbounded wealth. I can easily let you have a list of the several products derivable from the distillation; and you have my permission to give this most important matter whatever publicity you please. Some of the products have been seen by, I believe, the Marquis of Lansdowne, and others here, and I know the Irish court are already cognizant of the discovery. JOHT WATERS, M.D."

Having read this letter, the honorable gentleman proceeded to observe on the importance of this discovery, as tending to the development of the resources of Ireland. He said:

"It appeared by the testimony of Mr. Hodges, professor of chemistry in Belfast, and of an eminent chemist in Paris, who was also consulted, that Irish peat was capable of producing oil of a superior quality—oil equal to that of the spermaceti, which was now used in manufactures to such an extent, and which at present cost from £90 to £95 a ton. The manufacturers throughout England would hail it as a boon that henceforth they could have oil of as great purity as that of spermaceti for a sum of £40 per ton, instead of £95."

Lord Ashley, the honorable member for Bath, corroborated Mr. Mahon's statement. With respect to Mr. Owen, he said he was a "gentleman of property and great business, and he had enjoyed his friendship for three years." He then went on to say that—

"He had requested Mr. Owen to call on him this morning, that he might take down in writing what he had frequently heard from his lips in the course of conversation, and he would give the house the result of this gentleman's statement. No doubt it might appear almost incredible, bnt let him press upon the house that it was not a matter of theory, it was the result of experiment. These things had been in operation over twelve months; the gentleman had invested considerable capital and received considerable returns; and the great value of this was that he asked nothing of the country—all that he did was to show that there was a profitable investment of money, and to invite capital for the cultivation of the soil and the employment of the people. This gentleman said that with 100 tons of peat the labor of converting it would cost about £8. These 100 tons of peat contained

Carbonate of ammonia, 2,602 lbs.,	value	£32	10s.
Soda, 2,118 lbs., . .	"	32	10
Vinegar, 600 gallons, . .	"	7	10
Naptha, 30 gallons, . .	"	7	10
Candles, 600 lbs., . .	"		

"That was to say, they contained of the substance which was equal and superior to spermaceti, for every 100 tons—camphene oil, 700 galls.: common oil, 800 galls.; gas of the value of £8; ashes, £1 13 4—and therefore upon every 100 tons of peat, upon which £20 had been expended in labor, the total receipts were £91 16 8. That was what he held forth as the result of his operations. When the peat was cleared away, the soil beneath was exceedingly fertile, beyond all description, because it was saturated with ammonia.—Therefore, not only would the country be benefitted by this process; but the soil itself would be brought into cultivation. If one half of what he stated was true, everybody would allow that something very great was about to be undertaken; and if the house bore in mind that this was the result of experiment, they would see that 100,000 acres of Irish peat were far better than the whole region of California."

There can be no question as to the value of this discovery, provided the calculations be accurate. If £20 worth of labor can produce, out of 100 tons ot peat, a return of £91 16 8, without the aid of expensive machinery, the sooner the work is set about the better.—*Irish Railway Gazette.*

Fradulent Representations of Directors.

We have ever been of opinion, and have so expressed ourselves, that Directors are personably answerable for the statements they issue, to parties deceived by them. For instance, if Directors represent profits in their report which do not exist, or cannot be paid, except out of capital, or out of sums to be debited, by any juggling or concealment, to a future half year, they, the Directors, are liable for any loss sustained by purchasers of the shares and investors in the stock of the Company. The knowledge of the facts being entirely and exclusively in the possession of the Directors, false representations can be nothing but frauds, for the purpose of raising or keeping up the price of the shares to a value to which the are, intrinsically, not entitled.—Such representations are equivalent to selling goods by a false sample, or giving a false warranty of a horse. They are frauds in the literal sense of the word, and those taken in by them can recover. Some lawyers believe that an action against the Directors would not lie, because there is no contract between them and the buyer. Any special contract there certainly is not; but the report being itself printed and circulated, constitutes the inducement in the buyers to become Shareholders. It is a representation, not to any individual in particular, but to the whole public; it is a warranty that what has been paid, has been legally and honestly paid by the Company, and therefore, an assurance, under the circumstances of the times, of what the stock is worth. Whoever therefore, is cheated by the falsity in the reports, has a remedy against the authors of the falsehood. Were it not so, a few men may get into a Company and cheat and swindle the public by wholesale.

That we are correct in this view of the case, hear what Lords Campbell and Brougham said in a judgement on an appeal, Burnes *v.* Pennell, in the House of Lords the 16th of last month.

Lord Campbell says—

"If the appellant had been defrauded by any representations of the Directors, then, in that case, no doubt would exist as to the purchase being void. But it was not necessary that the Directors should have personally misconducted themselves in order to constitute defrauding. If they had made false representations by which he had been induced to accept a transfer of the shares, then that transfer might be set aside. He would here restate that which he had remarked in the progress of the arguments in reference to the conduct of Directors, who, with a view to raise the price of shares in the market, ventured to declare dividends out of the capital of a Company instead of out of the profits. Supposing a Company was not worked to a profit, and a dividend were made, and were made out of capital, it was quite clear that a gross fraud was committed, and the Directors making such a dividend were not only liable to a civil action, but were, in his opinion, guilty of a conspiracy, for which they might be indicted. He had no doubt but that any attempts which were made by false representations to raise the price of the shares in a joint stock Company, or in any kind of public stock, might be made the subject of an indictment. In the present case, however, it did not appear that there were any sufficient allegations sustained so as to connect the imputed fraud with the Directors, or even to prove that any fraud had been committed.—The dividends which had been announced in June, 1841, as well as in June, 1842, were clearly dividends which were to have been paid out of the premiums up to those periods received. It was impossible to deny but what it might have been imprudent to declare such dividends, but it did not follow therefore that the order for the dividends had been made in comtemplation of the sale of shares for the benefit either of the Directors or of the Company. This was different to a Railway Company, wherein the Directors had merely to take regular accounts of the outgoings and the incomings, and upon those results to make a calculation."

To this Lord Brougham adds, that he

"Altogether concurred in what had fallen from his noble and learned friend. It was not sufficient to show a miscalculation of profits to support a charge of fraud. Most sincerely did he agree that it was a wicked and false custom that had obtained of making and paying dividends out of capital instead of profits, and so leading the world to imagine that the profits of the particular concern were large, when, in one point of fact, there was a loss upon the transactions of the Company.—Snch payments were fradulent and a false representation, and were a good ground for having recourse to a much severer proceeding than a mere civil action."

These opinions, it will be observed, are delivered in judgement on a case of alleged fraud, in the highest court of judicature in the land. The opinion of these noble Lords is, not only that Directors are liable for the losses sustained, but that a false representation of profits is a felonious act, subjecting the parties to an indictment for conspiracy. Such, no doubt, ought to be the law if it was not. Knavery cannot well be carried to a greater extent, than to induce people by false representations to invert, perhaps, their all in worthless concerns. Wherein does it differ from getting money under false pretences. or downright robbery? In our opinion, the man who ventures his life in highway robbery, is not a whit worse than Directors who falsify accounts to plunder people of their property.—*Herapath's Journal.*

Mr. Hudson.

Of all the rumors circulated respecting this gentleman, there is not one that attributes to him any sense of personal humiliation, from the exposures that have taken place. On the contrary the prevailing opinion is, that he is determined to brazen the matter out. Herapath's Journal says:

"We hear the honorable gentleman bears his misfortunes bravely. As to any legal claims on him to refund, he laughs at them. He says they have none. One observation attributed to him contains, perhaps, more truth than wit, namely, that 'if there are any railway men better than he is, there are many much worse.' Another is, if he were called on to tell who had profited by him, names would appear of which the world little dreams.

"There is a report, said to rest on good authority, that the York and Berwick committee offered Mr. Hudson to accept £100,000 in lieu of all claims on him, which he would not give, but offered a much less sum. If this be true, we cannot understand on what authority the committee could make the offer; to say the least of it, it was imprudent."

It is said he has no intention of resigning his seat for Sunderland. The story about his applying for the Chiltern Hundreds, and having been refused, is not credited. It is quite clear that unless some compromise be effected, a Committee of Inquiry must be appointed next session to investigate his conduct—and it is equally clear that such an investigation will result in his expulsion from the house, though he will leave behind him many a greater scamp than himself.—*Irish Railway Gazette.*

The Island of Cuba.

This island is 624 miles in extreme length, with a width varying from 22 to 117 miles, and covers an area of 37,000 square miles, being about the size of the State of Maine. It contains a population, at the present time, of 1,400,000; of which about 610,000 are whites, 190,000 are free colored, and 600,000 slaves. Its imports in 1847 were $32,389,119, of which $7,049,975 were from the United States. Its exports during the same period were $27,998,770, of which $12,394,876 were to the United States. In 1847 the number of arrivals at its ports was 3,740, and the number of clearances 3,346. Its principal harbors are the finest in the world. The amount of American tonnage employed in the trade with Cuba is 476,773 tons. It has 195 miles of railroad completed and in successful operation, and 61 miles in course of construction. It is well watered by numerous rivers, and its surface, except in the central portion of the island, diversified with mountains. Only two fifths of its surface are cultivated. Of the reaining three fifths, now unused, one is probably worthless, leaving one half of its agricultural resources undeveloped. The climate is so genial that it yields two crops a year of many of its productions. It also abounds in materials for manufacturing purposes, and its mountains contain mines of copper which are worked to considerable advantage.—*Boston Transcript.*

Use of Colored Glass to Assist the View in Fogs.

The following curious observation is made by M. Luvizi, of Turin, in a letter to the editor of *L'Institut*, at Paris. If we verified, it may prove to be of importance to geodetical operations, as well as in observations at sea.

"When there is a fog between two corresponding stations, so that the one station can with difficulty be seen from the other, if the observer passes a colored glass between his eye and the eye-piece of his telescope, the effect of the fog is very sensibly diminished, so that freequently the signals from the other station can be very plainly perceived, when, wilhout the colored glass, the station itself could not be seen.—The different colors do not all produce this effect in the same degree. The red seems the most proper for the experiment. Those who have good sight prefer the dark red, those who are short-sighted like light red better. The explanation of this effect seem to depend upon the fact that the white color of the fog strikes too powerfully upon the organ of sight, especially if the glass have a somewhat large field. On the contrary, by placing a colored glass between the eye of the observer and the eye-gtass of the instrument, the intensity of the light is much diminished by the interception of a part of the rays; the observer's eye is less wearied, suflers less, and consequently distinguishes better the outlines of the object observed."

L'Institut, Jan. 4, 1849.

Lithographic Stone.

We understand that Dr. Henry McKenzie, of this place, has entered a piece of land, which contains a bed of lithographic stone of the very best quality. It is known that all lithographic stone used in the United States is brought from Germany, the only place in the world where it has hitherto been fonnd. This discovery of Dr. McKenzie, therefore, will be of immense benefit to the lithographist of this country, and to the art of lithographic engraving, as it of course can be obtained much cheaper from a quarry in Alabama, than it can be from Europe. We have seen the Talladega and the German stone compared, and those who are familiar with the qualities which constitute the excellence of the article, say that the former is greatly superior to latter. Indeed, specimens of the former have been

submitted to the examination of one of the most eminent engravers of Philadelphia, and he pronounces it of the very best quality. The bed is immediately on the banks of the Coosa river, and conveniently situated for cheap transportation.

There has also been found in this country abundance of Tripoli; as good we understand, as any in use. Tripoli is an article used by Jewellers for polishing metals, precious stones, and it is called Tripoli because it was first brought from the country of that name.—*Alabama Reporter.*

Iron.

The New York Express says that the contract which the Hudson River Railroad Company had with Peter Cooper, Esq., for supplying a part of the rails from Poughkeepsie to Albany, has been cancelled, the Company giving Mr. Cooper a *bonus* of $54,000. It will be recollected that the Company contracted for this iron at $67.50 *per ton* (the price which they have paid for the iron from New York to Poughkeepsie,)but now that iron has fallen to about $40 per ton, the Company have made a good bargain with Mr. Cooper in being let off with the $54,000.

A contract for a parcel of British railroad iron has been made at $37.50 per ton, delivered at New Orleans.

We learn from the Baltimore American, that the importation of iron into the port of Baltimore on Saturday last was about 1500 tons, including 901 tons Railroad bars from Wales, said to cost in Baltimore, including freight and duty, the low price of thirty-five dollars per ton. Under the Tarriff of 1842, all this iron would have been manufactured in Maryland.

The iron business on the Cumberland river, near Hanging Rock and Eddyville, Kentucky, has been of late conducted with great success. The Louisville Journal says that one of the large establishments there, and since 1835' the average dividends have been 15 per annum on the capital invested, while, in the mean time, over $260,000 has been lost by it in bad debts.

The American Iron Interest.

The importation of British iron for American railroads is becoming very general. We observed the other day a paragraph stating that the Cumberland Valley railroad, from Harrisburg to Chambersburg, is about to be re-laid with imported rails. This road runs through one of the best iron regions of Pennsylvania. Even in the West, foreign iron is imported largely. The Louisville Courier says, that almost every steamer from New Orleans brings more or less railroad iron for the Lexington and the Louisville and Frankford railroads. The directors of one of those roads have purchased 2,440 tons of foreign iron. Tennessee is suffering in her iron interest from a similar cause.—She has, to a considerable extent, been driven out of the New Orleans market by shipments of Scotch pig iron. Maryland has her full share of depression and loss, also, in her iron interest.

We are well aware that the opponents of protection will say that this is all right, and that if foreign iron can be laid down in this country at cheaper rates than own manufacturers can make it for, it is to our interest to import it. The argument on this point and its refutation have been often repeated that it would be useless to discuss the question here. One thing, however, is clear, viz: that the national policy in reference to this subject ought to be one thing or another. If there is to be no protection let it be said and so understood. But it is unworthy of a great nation to palter with the interests and the industry of its people, and while pretending to a reality to shuffle off with a mear mockery.

Under the Tariff of 1842, with a fixed duty, our iron interest arose from prostration and flourished all over the country. For it is the happy lot of this land to possess, in almost every portion of its territories, large and rich deposits of this most valuable of metals. With the Tariff of 1846 came an *ad valorem* duty, contrived with a baneful ingenuity to rise whem the price of iron in Europe is so high that it cannot be imported here and when no protection is needed, and to fall as the price falls abroad and when importations pouring into the country under these low prices render protection indispensable.

When the Tariff of 1846 was adopted, and for some time subsequently, the immense consumption of iron in Great Britain for railroad pnrposes kept the price so high there that our manufactures suffered nothing from the change of Tariffs. The case, now however, is widely different. The railroad mania in England has subsided, while the large production of iron, stimulated by it, continues to go on and thus a large surplus is constantly on hand to be disposed of in our markets. It comes in the place of the ballast and at almost nominal freights across the Atlantic.

Now if the duty of thirty per cent. under the present Tariff were a fixed duty on a fair minimum valuation—if it were really and truly what it purports to be, a reliable duty, steady and unvaried—then our manufactures could calculate with some certainty and conduct their operations accordingly. But the present system, yielding protection when it is not wanted, and denying protection when it is essential, is of all systems the mose tantalizing, deceptive and ruinous.—*Baltimore Amer.*

From the Baltimore American.

Meeting of Pennsylvania Iron Masters.

At a meeting of furnace owners from various counties in western Pennsylvania, held at the St. Charles Hotel, Pittsburgh, on Saturday, August 18, Mr. C. Myers, of Clarion, was called to the chair; D. Ritchie and W. Colwell, of Armstrong, R. Clapp, of Venango, and W. E. Speer, of Butler, vice presidents; and Geo. S. King, of Cambria, and W. W. Wallace, of Mercer, appointed secretaries.

The object of the meeting was then stated by the chairman—to take into consideration the depressed state of the iron trade, and ascertain the cause thereof, with a view of pointing out some remedial measure to protect that great branch of Pennaylvania industry from falling into the same ruin with which it was visited in 1840, '41 and '42. Upon motion a committee of five was appointed to make a report to the meeting in the evening.

The chair then appointed the following committee: Nathan Evens, P. Kerr, of Clarion, D. Ritchie, of Armstrong, Jacob Black, of Clarion, and John Linton of Cambria.

The meeting then adjourned to meet at the same place, at 8 o'clock P. M.

The meeting having assembled, agreeably to adjournment, the committee made a report:

That, in pursnance of their appointment, they had recurred to the history of the iron business of this country for the last thirty years. That they find that as early as during the embargo system of 1808, succeeded by the war of 1812, the iron business of Pennsylvania had increased to a degree unexampled at any former period. That this property continued till the close of the troubles and war with Great Britain, which, so long as these lasted. afforded ample peotection to this interast, to agriculture, and to labor. That so soon as this protection was removed by the re-opening of trade with England, consequent upon the peace, the price of iron, of agricultural produce, and labor, went down to a degree indicating the absence of almost any demand for agricultural produce and labor. That up to 1816 pig iron sold in the Pittsbugh market at $60 per ton; wheat, through the country at $1.50 per bushel; and the price of labor was $20 per month. That in 1820 and '21 pig iron had fallen to less than $20 per ton, wheat to 25 cents per bushel, and labor to $6 per month. That the successive tariffs of 1822, '24, and '28 had a tendency to restore the prosperiiy of all these interests, each of which continued to improve until the effects of the comprise tariff of 1833 came to be felt in the markets of the country, by re-opening our ports to the iron of England. That the system of this compromise reached its minimum rate in 1842. That such was its effect upon the interests alluded to, that pig iron, which had increased in value to $55 and $60 per ton, in 1836, fell to $17.50 and $18 in 1842. That wheat from $1.50 per bnshel to 40 cents; and labor, from being in demand at high rates in cash, went a begging. That we find a decided improvement in each of these important interests in 1843, continuing on through 1844 '45, '46, and '47, That during the years from 1842 to 1846 seventy-five new furnaces were erected in the countries we represent. That since 1846 there have been but three new furnaces built, That pig iron, which was in current and ready demand in 1845, and until 1847, at $32 and $37 per ton, is now without demand, and sales weekly reported to us of good iron, at $20 per ton. That from these facts your committee are brought to this inevitable conclusion: that, as iron and labor are protected by an adequate duty on imports, those interests flourish: that as that protection is withdrawn, they languish and die. Your committee therefore tender for consideration the following:

Resolved, That the present depressed state of the iron trade has its origin and is entirely caused by the low rates of duty at which English iron is admitted into this country under the tariff law of 1846, and its injudicious and valorem principles.

Resolved, That five-sixths of the value of pig iron consists of labor, and as this labor can be procured in England at less than one third of what it usually commands in good times in this country, we in the United States can never compete with the English iron-masters except by a reduction of labor to the pauper rates of that country, or protection from its competition.

Resolved That it is not the wish of any of this meeting, and we hope of no American, to see the rates of labor in this happy country reduced to the rates of poverty in Europe.

Resolved, That, to ensure a different and more happy state of things among us, the labor of this country, including all its mineral and agricultural products, must be protected in our markets from the redundant labor of other countries.

Resolved, That, we and each of us pledge ourselves to use the utmost of our exertions to procure such protection, which can only be secured be a duty of specific values.

Resolved, That it is the duty of the iron men and agriculturists of Western Pennsylvania and elsewhere to hold meetings in their different counties, and organize for the purpose of petitioning Congress for a change from the present ad valorem to a system of specific duties, of adequate protection to the labor of the country.

Resolved, That this meeting recommend a Convention of the furnace owners of Pennsylvania, Virginia, Ohio, and Kentucky, to be held in the city of Pittsburgh, on Wednesday, the 21st of November next. to take into consideration all necessary and further action in the premises.

The preamble and resolutions were severally read and discussed, and finally unanimously adopted; after which upon motion of RALPH CLAPP, Esq., it was

Resolved, That the papers in Western Pendsylvania and others friendly to the interests of American labor be requested to publish the proceedings here had.

Whereupon the meeting adjourned *sine die.*

American Patents.

1. For an improvement in Compound Rail for Railroads; Benj. H. Latrobe, Baltimore, Maryland, September 5.

The patentee says—"My rail is composed of three parts, by which I secure an approximation to a uniformity of strength in the combined bar, by breaking the joints at two points instead of one, which is all that can be effected by the former modes; and it can be applied in many places where the other could not:"

Claim.—"What I claim as my invention, is the combination of the cap rail and base rails, substantially in the manner and for the purposes set forth."

2. For an Improvement in the Self-Acting Switch; Edward J. Sterns, Ellicott's Mills, Ann Arundel county, Maryland, September 5.

The patentee says—"The nature of my invention consists in so arranging one end of a self-adjusting railroad switch, that the manager or engineer of a locomotive, or any other railroad car, may direct the train from the main track to a branch track, by moving a lever attached to the locomotive or cars, and in so arranging the other end of the switch that it may be operated by the flanches of the wheels when passing from the branch to the main track, or otherwise."

Claim.—"What I claim as my invention, is the application and hanging of the switch-rail, so as to turn horizontally on a pivot, as set forth, in combination with the horizontal lever beneath the flat plate, and the spring acting upon it, and through it, upon the switch rail, and thus keeping the switch rail pressed against the narrow end of the tapering rail, when the cars are not passing through; also in combination with the tilting frame below, and the flanch levers resting upon it at one end, and the crowning levers at the other, and the arranging of these latter levers so as to arrest the long arm of the one or the other of the horizontal levers, and thus hold fast one or the other of the switch rails, according as the one or the other side of the tilting frame

is depressed by a movable lever attached to the locomotive or car, pressing on the one or the other of the crowning levers in going towards the turnout, or by the flanch levers at the other end of the frame in coming back on the one or the other track, as set forth."

3. For an Improvement in Locomotives; Gustavus A. Nicolls, Reading, Berks county, Pennsylvania, September 19.

Claim.—"What I claim as my invention, is, 1st, the employment of a boiler, constructed in the manner and for the purposes set forth, when combined with an engine on a separate carriage as set forth.

"2d. The employment of a cylinder to constitute the body of the engine carriage, connected and combined with the steam cylinder, as set forth, int which the cylinders exhaust, to act as a hot well and partial condenser, and to give the required weight of the engine, that the traction of the driving wheels and the weight may be regulated and adapted to the load to be drawn, and to the condition of the road.

"3d. I claim the air condenser, in combination with the steam cylinders and water cylinder, for the purpose of condensing the exhaust steam, substantially as set forth, the condenser being cooled by the action of the atmosphere.

"And finally, I claim placing the closed ash pan of the boiler furnace on the boiler carriage, in combination with the fan blower placed on the engine carriage, the two being connected by means of an elastic or oth r yielding pipe, substantially as set forth."

Vermont.

The Rutland and Burlington Railroad Company—Two fine passenger cars and her noble engine (the "Middlebury") have been received at Burlington for the use of this road, which is now in rapid progress towards completion. Sixty miles of the track are already laid (more than one half the entire line). Regular passenger and freight trains are running daily, from Bellows Falls to Ludlow, 28 miles, and the iron is down, from Burlington southward as far as Middlebury, 32 miles. The breaking of a derrick at Beman's Hollow, (the crossing of the New Haven River,) some three or four miles this side of Middlebury, has unavoidably delayed the completion of the bridge at that point for a few days.—Within the coming week, however, this splendid and massive structure will be finished, when, we understand. it is the intention of the Directors to commence running passenger and freight cars between Middlebury and Burlington, daily. Our Middlebury friends whose arms are *an hour long*, can then shake hands with us.

The steady, rapid, and noiseless progress of the Rutland road towards completion, has attracted almost universal notice and admiration. We are free to say that the manner in which this great public work has been managed is worthy of the highest commendation and praise, and reflects great credit upon the board of Directors, the Chief Engineer, Mr. Gilbert, and the efficient and capable corps of assistants.—*Burlington Free Press.*

New York.

Auburn and Rochester Railroad.

The receipts of this road, for the last six months, show a good result, considering the fact that the cholera has prevailed. The figures are as annexed.

Feb. 2—Surplus profits,		$83,624 14
Receipts for February,		24,902 93
" March,		26,685 04
" April,		46,170 97
" May,		65,976 03
" June,		49,884 10
" July,		42,198 87
Mail,		5,600 00
		$343,112 08
Running expenses and repairs,	$124,850 92	
Interest,	21,455 00	
Dividend 4 per cent.,	86,070 60	
		232,276 52
Surplus,		$110,834 96

The capital of the road is $2,151,765, and the net earning of the above six months exceed 5 per cent.

A convention is to be held on the 22d to arrange a consolidation of this road and the Auburn and Syracuse, and to discuss the question of a branch from Summit to Vicar.

The receipts of the Mohawk railroad for the six months ending 30th June, are about $4,500 in advance of the same time last year. In July the prevalence of cholera operated adversely upon the receipts, as it has upon the receipts of all the railroads.

Ogdensburgh Railroad.

An adjourned meeting of the stockholders of the Northern Railroad Co., of New York, was held yesterday at Cochituate Hall. In the absence of the Hon. James Savage, Samuel Cabot, Esq., was called to the chair; Wm. T. Eustis was appointed Secretary. The following statement was made by the Treasurer of the Company:

To the Stockholders of the Northern Railroad:

GENTLEMEN:—At the meeting held at this plaec two weeks ago, a committee was appointed to obtain the necessary subscriptions for the Bonds of the Company; several days were consumed in printing and distributing the proceedings of that meeting, and a circular to the Stockholders. The amount of Bonds already provided for is about $400,000.

Nearly every stockholder who has been called upon, has taken an amount of bonds equal to this amount of stock, some have taken more, and the few who have declined to subscribe when asked, have the matter under advisement. It is believed that no shareholder will finally decline the application, when the subject is fully understood, as if is absolutely necessary in order to carry out our plans, that each person should bear his proportion of the burden.

A large number of stockholders yet remain to be seen, and they will much facilitate the business by calling immediately on the Treasurer, and subscribing for their proportion of bonds. A heavy co-operation on the part of all the stockholders is much to be desired.

Henry Hall, Esq., offered the following vote, which was passed unanimously, viz.:

Voted, That the progress already made in the subscription list, warrants a belief that the whole amount needed will be obtained on the terms offered the Stockholders, and that the importance of the immediate filling up of the required amount call for a *voluntary movement* on the part of each Stockholder, to avoid the delay consequent upon a personal application.

The meeting was then adjourned to be called by Treasurer.—*Boston Atlas.*

Maryland.

Baltimore and Ohio Railroad.—The receipts of the Baltimore and Ohio railroad, for the month of July, were:—From freight, $57,054 52; from passengers, $42,098 01; total, $100,051 53; which is an increase over the receipts of July, 1848, of $1,652 53. On the main stem there was an increase of $7,114 99; but a decrease on the Washington branch of $5,462-46.

The Commecial Marine of the U. States.

The following astonishing statistics are from the report of the Secretary of the Treasury, on the commercial navigation of the United States for the last fiscal year.

The extraordinary commercial progress of our country is shown in the following table of the sum total of our tonnage, with the increase per cent, for four decimal periods:

1818, 1,225,284 tons; 1828, 1,741,391 tons, 42 per cent; 1838, 1,995,639 tons, 15 per cent; 1848, 3,154-051 tons, 56 per cent.

In 30 years the tonnage of the United States has increased 160 per cent, upon what it was in 1818.

The first 6 States, in point of ship building, are presented in their order, as follows:

Maine, 89,974 tons; New York, 68,434 tons Massachusetts, 39,366 tons; Pennsylvania, 29,638 tons; Maryland, 17,480 tons; Ohio, 13,655 tons.

The following facts appear from the report:

One-third of the ship building of Pennsylvania, is in the west—8,000 tons of New York ship building is on the lakes.

The State of Ohio, an entirely inland State, is the 6th in point of ship building.

The State of Ohio builds as much tonnage in vessels as all the States and ports from Chesapeake Bay to the Rio Grande.

Ohio builds double as much as Virginia, North Carolina, South Carolina, and Florida.

The following is a view of the American tonnage of the lakes, as entered in the different marine districts;

Lake Champlain, 4,745 tons; Lake Ontario, 33,-800 tons; Lake Erie, 115,960 tons. Lake Michigan 10,483 tons—Total, 164,997.

The tonnage of the western rivers, (exclusive of New Orleans,) is:

Pittsburg, 30,970 tons: Wheeling, 2,660 tons; Cincinnati, 24,350 tons; Louisville, 8,822 tons; St. Louis, 36,512 tons; Nashville, 2,445 tons; Vicksburg, 588 tons—Total, 108,127.

The river tonnage entered at New Orleans is almost equal to the whole of the above, making a total of almost 200,000 tons of ship tonnage on the western rivers.—*Albany E. Journal.*

Practical Use of Lake Winnipiseogee.

The Land and Water Company, owning the factories at Lowell and elsewhere on the Merrimack, purchased a few years since, the right to the water of Lake Winnipiseogee. The Lake now constitutes a vast reservoir for the supply of water to the Merrimack, during the months when the river is at a low ebb. To obtain the command of the water a new channel has been excavated, parallel to the old one. This enables them to command eight feet of water in depth of the whole surface of the Lake. The supply thus obtained is invaluable. For some weeks past, the Merrimack has been so slow that without this supply many of the cotton mills could have worked but a portion of their machinery. Some one has said that the aid thus obtained is worth a thousand dollars a day to the manufacturing companies. A single inch per day upon the surface of the Lake will usually be all that is required, and hence the eight feet will afford a supply for ninety-six days. It will be remembered that the Lake is above 22 miles in length and from one to ten in breadth, and besides this has a large number of bays, hence by a depression of a single inch upon the surface an immense quantity of water is drawn off. This advantage is one which but few rivers possess in the dry season, and gives additional value to the water power of the Merrimack. —*Manchester Dem.*

American Steamships.

The ocean steamers which are in progress of erection at New York are thus noted in the Evening Post:

Within a year, five of the largest steamships in the world will be sent to sea. The two in the greatest state of forwardness are the Ohio and Georgia, belonging to the N. Orleans and Chagress mail line, on which Mess. Law, Sloo, and other parties are contractors. These ships are shaped upon the most beautiful model yet adopted in the construction of any steamship, Their capacity is stated to be 2,750 tons each. Larger than even these are the two ships building under the contract for the conveyance of the mail between New York and Liverpool, held by Mr. E. R. Collins, the Atlantic and Pacific, which are now receiving their engines at the works of Stillman and Allen, and Allaire and Co. These ships are rated at over three thousand tons each, and will be capable, in the opinion of their constructor, of carrying a greater number of passengers, and more freight, than any steamship ever built, not excepting the President and Great Britain. Another very large ship, that can soon be fitted for sea service, is the Franklin, of twenty-two hundred tons. Her model is a very fine one, and appears adapted to the attainment of great speed. She was commenced by the proprietors of the Bremen line, but is said to have been transferred to Messrs. Fox and Livingston, who designed placing her upon the route to Havre via Southampton.

Besides these, four other steamers of the largest class are under contract, and will be built as soon as practicable. Two of them will belong to collins' line, and will be of the same tonnage as the Atlantic and Pacific. One of them, the Arctic, is nearly ready for launching. Here, therefore, is to be a fleet of nine steamers, which, for size and costliness, will exceed any yet brought into service on this or the other side of the ocean. Their failure or success will depend in a great degree upon the care and skill with which their engines are constructed, upon the manner in which the machinery shall be adjusted to the hulls of the ships, and upon the completeness of the preparations in the engineers'

departments, before the vessels attempt their first voyage."

United States Steamship Susquehanna. We learn by the Journal of Commerce that the Susquehanna, at Philadelphia, will be ready to launch early next spring. She is 30 feet longer than the famous ship Pennsylvania. Her breadth of beam is much less, and her tonnage is but 2500. She will carry but 8 guns of heavy calibre—one of them, which will be placed upon her bow, will throw hollow shot weighing 268 pounds.—Her machinery will cost $300,000—the four boilers alone $30,000 each—and the whole vessel when completed, about $600,000. Her crew will consist of about 300 men.

AMERICAN RAILROAD JOURNAL.

Saturday, September 1, 1849.

Railroad Iron--Foreign and American.

At least one hundred thousand tons of English railroad iron have either been received or ordered for this country within the last twelve months—at a cost of about five millions of dollars. To manufacture this quantity of iron, would require about 17,000 workmen—and making the usual allowance of five persons as dependant upon each one, we have a total population of 85,000 persons, who have been directly supported by the production of this enormous quantity of iron. These 85,000 persons in their turn give support to a great many thousand of farmers, mechanics, and professional men, who are again enabled to contribute to each other's subsistence. Now, it is certainly worthy of the consideration of our railroad companies, whether American or English railroads shall do the transportation of these thousands of industrious artizans, and their families, and of the freight they create. It is obvious, that if we buy English rails, all this business must be done on English railroads;—and we are actually swelling their dividends, when we pay for English iron. On the other hand, if our companies buy *American* rails, the business created by their manufacture is done over American roads, and each link in the great chain of railroads soon gets back its proportion of the money paid out for rails, in the shape of fares and tolls—not one dollar of which would they receive, if the article were purchased abroad. It is plainly, therefore, the direct interest of our companies to buy American rails. "But," says an economical President, "we can purchase English rails for $40 per ton, and cannot get American for less than $50. This difference in a 60-lb. rail will make our road cost $1,000 per mile more—our capital is limited, and while we feel very *patriotic*, we must make the money of our stockholders go to the end if possible."

Now to the stockholders of companies, who are economically disposed, we submit the propriety of considering, how long it will take to earn an additional thousand dollars per mile, if they can only transfer the business directly and indirectly produced by an active population of 85,000 persons from England to this country. And besides the difference does not amount to a thousand dollars per mile; for the English rails frequently come into the hands of the track layer, crooked and winding. This need never be the case with American rails, properly made, and especially where the inspection may be cheaply made at the works. Crooked and winding rails are very serious obstacles to obtaining high speed—and we all know that every mile added to the speed of a train is attended with increased expense. By using well made American rails, greater speed may be attained with much less expense, than with crooked and winding Welsh rails—and the thousand dollars per mile is soon saved out of the running expenses of the road.

These considerations alone would seem to be sufficient to induce our companies, on prudential motives, to give the preference to American rails, even at the increased cost. And we can only account for the fact that English rails have been purchased so largely during the past year, upon the idea, that they have labored under the impression, that the difference at first cost is really greater than it is.

But there is another consideration more important to the railroad interest than any we have yet suggested.—We refer to the *quality* of the rail, upon which in the long run the certainty of uninterrupted dividends depends more than on anything else, for we should not place much value upon stock in any road, which is compelled to relay its rails every few years in consequence of using those of inferior quality. The essential requisites of a good rail are *stiffness and durability*—in other words, power to resist the superincumbent weight, and the wear of the locomotive engine. To insure this, the iron must be close grained, and yet fibrous, so as to have great tenacity, and afford sufficient adhesion to the tires of the locomotive. Rails showing these characteristics can be made both in England and this country, as well as rails in which they are entirely deficient. In other words, rails are not *good* simply because they are American, or *bad* because they are *English*. But the *best* American rails, such as are made at several of our well known establishments, are at least equal to the best made in England, from their "good best" iron, such as they use for their refined machinery iron, and which cannot now be purchased for less than £7 10s. per ton, although common Welsh bars can be bought for £5; and responsible parties here are ready to deliver American rails guaranteed to be stiffer and more durable than English "good best" rails, at the same price that they can be imported for, but against the common bar they cannot compete. The advantage of the American manufacturer consists in the natural superiority of his raw material; while the English maker finds his advantage in the lower price of the labor he employs. But to make a good article out of inferior ore, he is compelled to bestow much more labor, and hence American iron of the best quality, being made with less labor, can compete successfully, even under the present tariff, against the best English iron, but against the common Welsh bars, such as our companies have been importing so extensively American competition is hopeless.—"But," we are told by some, "these Welsh bars are as good for *rails*, as the "good best" iron; and the cry against them is only raised by parties, who are interested in American manufactures. It is true Welsh iron will not make merchant iron like the best Staffordshire or American iron, but for rails such iron is not required." We believe that *rails ought to be made of the very best iron*, and that the engineer, who advocates any other iron is not doing his duty to the stockholders of the company which relies upon his judgment. Sad experience has taught this lesson in England, and we beg the careful attention of all persons interested in railroads to the following communication, which we find in the London Mining Journal:

To the Editor of the London Mining Journal:

SIR.—The very numerous and loud complaints, which we almost daily hear of the inferior quality of the rails, that are now being used upon the different railways in this kingdom, and the imputations cast upon the iron masters on this account, require from them some notice, as I feel they are not blameable to anything like the extent which is cast upon them. For the honor of the trade to which I belong I have given the subject considerable attention; and, upon referring to the progress of railways from their commencement, and also the progress of the manufacture of railway bars during the same period, I find there are many palliating circumstances, which very much mitigate the amount of blame thrown upon the members of the iron trade. When railways first commenced, the quality of the rails was considered of first importance. The very best material was used in their manufacture; nothing else was allowed to be used for the rails. The contract for the Leeds and Selby line was taken by Messrs. Walker, of Gospel Oak, who made the rails; they were tied to the use of the best make of pig-iron. The puddled, or No. 1. bar was cut up, piled, and heated in the ball-furnace, shingled into a bloom, and rolled into a good best bar. Then it was cut up again, and rolled into the rail, without any mixture of inferior iron—so that when the rail was finished, it really was good best iron. The price paid was for best iron, and the railway company got value received. I have this information upon the testimony of an eminent practical iron master, who was called in by the maker to inspect the rails in the progress of their manufacture, so that he might satisfy the parties, that the iron used was really what it was sold for—the price, I believe, was 10s. or 20s. per ton above best bars.

What is the case now? Why, the very worst iron that can be made or purchased is now used in the manufacture of railway bars. Hot-blast cinder iron made into white pigs, is now sought after to be used for this purpose, and the price of railway bars, instead of being 10s. or 20s. per ton more than good best iron, is reduced to as low, and, in some instances, lower than the commonest bar-iron that can be found, either in Staffordshire or Wales—complete trash; and yet some of the purchasers will have you believe they got best iron, while the fact is rails cannot be made of good best iron at less than from two to three pounds per ton above that they are now selling at. It reminds me of orders being sent for gold watch seals, tying the maker to about 9d. or 1s. each. This is just now the case with rails; and the consequence is, they are no sooner laid down, than in a few weeks or months they begin to laminate, split, and crush, and are obliged to be taken up and replaced, as they are found to give way; and thus the railway is continually endangering the lives of the passengers, besides being a serious expense to the company. Many are now putting the rounded-topped rail, which puts off the evil day a little; but this destroys the tires as fast again, and thus increases the loss.

This state of things has been brought about by an unnatural state of trade. Since the demand for railway iron has become so large, many joint stock companies have been formed; to make iron some millions of capital have been brought together, and large works built, and put in motion by boards of directors; and these men, knowing nothing about making iron, and having no connection to take their iron, have to force sales by lower prices than are asked by the private iron master, working with his own money; and to follow these common destructives, he is obliged to resort to the use of an inferior metal, or go to ruin; and thus it has come, in self defence, instead of using the very best pig-iron that could be made, to using the very worst and cheapest that could be got, and this accounts for the deteriorated quality of the rails. How can this state of things be remedied? Why, buy best iron, and give best iron price for it, and plenty of men can be found to do you justice; best bar-iron is now, at the present reduced price, worth £7 per ton at the works; no man can put this qualiy into good rails, to do you and himself justice, at less than £7 10; and yet I hear of their being sold at £5 or under—being as low, or lower, than the veriest trash, that can be found in the bar-iron market. Now, what folly this is, to suppose you can have gold for the price of silver, good copper for the price of common brass, or good best iron for the price of the veriest rubbish that can be made. To abolish this rotten system, give a fair price to the maker; this will enable him to do you justice, and bind him to uphold the quality of the rails, by exchanging every rail that splits laminates, or crushes, for five years after they are laid down upon the permanent way. This will put a stop to selling base metal for sterling stuff, and

will wind up some of those concerns, who are wasting, as fast as possible, the money of those, who have been so foolish as to advance it to build castles in the air.—*A. Staffordshire Iron Master.*

Now this is not the testimony of an American manufacturer, but of an *English iron master*, in regard to English rails. And that it is entirely true, we have fortunately conclusive evidence near at home. On the Camden and Amboy railroad are to be found five hundred tons of rails weighing only 40 lbs. to the yard, which were ordered by Robt. L. Stevens, Esq., on his original visit to England for rails, made from Bagnall's "good best" iron, for which one pound per ton was paid above the best *English* refined merchant iron. They were laid 16 years ago—and notwithstanding their light weight, and the immense business of the road, they are yet in good order; while the heavier rails of inferior iron, in their immediate vicinity, have long since been replaced with American rails. So well have the officers of that company learned the value of good iron by experience, that they have within a few weeks, given an order to the Trenton Iron Company for rails at $55 per ton, which is really less than rails of corresponding quality, made from "good best" iron can be imported for. And we are authorized by Messrs. Cooper & Hewitt, the agents of the Trenton Iron Company, to say, (and doubtless every other American manufacturer will do the same) that they are prepared to deliver rails, which they will warrant to be *at least* as stiff and strong as English rails made from "good best" iron, at the same price as the latter can be imported for; and that they will accompany them with the guarantee mentioned in the above communication, viz: "that they will exchange every rail that splits, laminates, or crushes within five years after they are laid down." We refer more particularly to the Trenton Iron Works, only because we are personally more familiar with the material from which these rails are now exclusively made, viz: the primitive red-oxide of iron, procured from the Andover mines in New Jersey, of which we shall give a full description in our articles on the manufacture of iron in New Jersey. No better iron is made for rails or merchant bars, than is produced from this ore: and we can bear personal testimony to the care, skill and success with which the ore is reduced at the blast furnace, and converted into the finished rail at the rolling mill. The other American establishments, at Mt. Savage, Danville, Phoenixville, Safe Harbor, Hyde Park, and Boonton, with which we regret to be personally not so familiar as with those at Trenton, have all maintained a high reputation, and will doubtless contract to make rails of the best quality, as we are sure they can do.

We desire to impress upon our railroad companies the importance of putting down the *best* rails they can get, even at a little additional cost. In this way only can be avoided the absorption of all the earnings in road repairs, which some companies in order to keep up dividends, have been compelled year after year to smuggle into the capital stock under the ubiquitous mantle of *construction.* No sooner is a track laid with $40 Welsh rails, than the work of renewing them commences—and in two years, in some cases within our knowledge, almost every rail has shown defects to a greater or less extent. Now by the expenditure of one thousand dollars per mile additional at the outset, this whole expense might be saved for five years at least, because American makers will guarantee their rails for that time; and if they stand five years without showing defects, they are good for ten years more at least. If any of our friends prefer to buy English rails, rather than American, at the same price, (as we trust they do not,) to them we say, buy the "good best" bars, in preference to common Welsh rails.—It will cost you a little more at the outset, but you will find your account in the end, in regular dividends, without a corresponding increase of capital stock; in less wear and tear and reduced running expenses; and in the greater speed and security with which you can run your trains. Every day holds you to a stricter accountability for accidents, and rest assured that the community will not long deem you guiltless of taking human life, unless you avail yourselves of every possible security against accident.

It seems to us that it ought to be a subject of general congratulation that the American manufacture, in five years, has been brought to such perfection, that even in the present depressed state of the iron trade abroad, and under the present low tariff, admitted by Mr. Ex-Secretary Walker himself, to be below the revenue standard for iron, rails can be made here, at least as cheaply as the foreign article of *corresponding*, we do not say *equal quality*, can be imported for. And we confess that we have been surprised at the magnitude of the orders which have been sent abroad for rails, when our own mills are standing idle, and ready to enter into contracts on such terms as we have stated above. Nothing but ignorance of the true nature of the case, can account for the fact. And we have thus earnestly and fully given our views, in order that the stockholders of railroad companies may judge of the propriety of instructing their officers, in all cases to use the best iron, if the additional cost does not exceed $1,000 per mile—and that American rails shall always be preferred at the same price, provided proper guarantees are given to secure rails at least equal to the best English bars. In summing up the comparative advantages of purchasing the best and common rails, it should not be overlooked, that the former, when worn out, will sell for much more per ton, to be made into nails and merchant iron than the latter—and the difference in value will be greater than the difference in first cost—so that if a company have the requisite capital to make the purchase, the ultimate cost in dollars and cents will be no more for good iron than for inferior—while it will last at least twice as long.

We have only a few words to add in regard to the working of the tariff of 1846, upon the importation of good and bad iron. But we shall throw the subject of protection entirely out of the question.—The difference in first cost between the best English rails, such as we ought to import, if we import any, and the common Welsh rail, which we are now purchasing so largely, is about $11 per ton. Now there are engineers and companies who know the value of good iron sufficiently well to be willing to pay this difference in price. But the tariff is *ad valorem*, and as the *price* increases, the *duty* increases, and the intrinsic difference between the cost of good and bad rails, is enhanced from $11 to $14 30 per cent. This is too much—and even these experienced engineers buy poor iron, because they are unwilling to confront ignorant stockholders, who would be horrified at the idea of paying $55 per ton for rails, when $40 is the price paid by a rival or neighboring road. The tariff of 1846, which was framed with the avowed object of securing to the consumer the best article at the lowest price, actually offers a bribe of $3 30 per cent. per ton to our railroad companies to put down inferior instead of good iron. It discourages the use of the best article and endangers the lives and comfort of all who ride upon railroads. Now a specific duty, too low to afford any protection, and simply with a view to revenue, will be far better for the consumer and the public—as in a mater of such serious moment, we think the discrimination should be made against the inferior article, rather than in its favor. If the duty were so regulated as to bring the price of the common Welsh bar up to the present price of the best English iron, we should have no more of English rails in this country, while the railroad companies would find their dividends increased, by the saving in annual current expenses, and the increase of traffic resulting from the general revival of the iron trade; the iron master would rekindle his fires, now idle throughout the country; the honest laborer, now without the means of subsistence, would again look upon a cheerful home and a happy family;—and the public at large would ride in greater security and comfort behind the iron horse and his fearful flights. H.

☞ Mr. Hodge leaves New York on Tuesday next for another expedition to the Lake Superior copper region.—He expects to be absent about two months.—His articles on the mining resources and smelting furnaces of the United States will go on as in his previous absence, without interruption.—Communications may be addressed to him at Eagle river, Lake Superior.

Iron Bridges.

Our attention has been directed to the manufacture of Iron Bridges for Railroads, which is prosecuted in this city by the New York Iron Bridge Company, of which Mr. M. M. White is Agent, and an advertisement of whose operations may be found in another column. We do not know, that in asking attention to this subject, we can do better, than take the following notice of it from the Buffalo Commercial Advertiser.

The New York Iron Bridge Co. have just completed an Iron Bridge over the Buffalo Creek for the White's Cornerss and Buffalo Plank Road Co., which establishes the fact that Iron is the best material for long spans of bridging, when strength and durability as well as ornamental structure are desirable.

This bridge is situated on the "Abbott Road," about two miles from the foot of Main street. It is what is denominated a Suspension Truss Bridge, upon an improved plan, partaking of all the important principles of the Suspension Bridge, without its objectional points.

It was constructed under the superintendence of Mr. M. M. White, who is agent, and one of the company engaged in the manufacture of this description of Bridges in the City of New York, where its parts were made and transported to this place. This Bridge is of 160 feet clear span—being the longest yet constructed of Iron in this country. It has two carriage ways, each twelve feet in width, and the Trusses are fifteen feet in depth.

Taken as a whole, it is a magnificent structure, and in detail it presents a most perfect specimen of mechanical architecture. It was subjected to a pressure of 50 tons, (the test stipulated in the contract,) and observed to settle only about ¼ of an inch in the centre, but when the weight was removed it immediately resumed its former position. and there was scarcely any vibration discernible while two heavy carriages were driven over it at a time on a brisk trot.

There can be no doubt of the perfect success of this bridge. It has beauty, strength and utility combined, which are highly desirable considerations and especially in cities, where unseemly wooden structures so often offend our ideas of taste. It is a curiosity well worth a ride out to see, independent of the opportunity offered to enjoy a delightful drive over the beautiful plank road. C.

Alabama Coal Trade.

In the interior of the State of Alabama near Tuscaloosa, and about 500 miles by river navigation from Mobile is a large bituminous coal field; the most southern on the range of the great coal formation of our Middle States. Associated with or near the beds of coal are large quantities of iron ore,

much of it hematite of superior quality, and remarkably convenient for mining, and for shipment after reduction to iron. We have some data respecting the prospects of the iron business here, which will find their place in the publication of the articles on the iron mines and iron manufactnre of the United States.

A new importance has lately been given to the coal beds by the British West India mail steamers now making Mobile one of their stopping places in their communication with New Orleans; and there receiving supplies of the Alabama coal for their use. From the Alabama Weekly Herald and Tribune we gather some facts relative to this trade, which may be interesting to our readers:

"The first West India mail steamer which entered our bay in February last took on trial 106 tons of Alabama coal: it gave satisfaction; and up to this date, we have delivered to the several steamers at Mobile Point, 150 tons—all of which was brought to this city from the neighbourhood of Tuscaloosa, last fall and spring. We have delivered all that there is in the city. The steamer would gladly take more, if it could be procured. A portion of the coal brought down the last season, say one-half, was of inferior quality, having been taken from the surface of the coal beds, very small, and mixed with dirt.—In mining or digging the coal, great care should be taken to procure the coal in lumps as large as they can be handled. The larger the better, and free from dirt. Getting out large coal is more profitable to the worker, as there will be less waste in transportation. We also recommend that the flats used for transportation be covered with plank, which will prevent the coal from being broken by walking over it when coming down the river. The plank so used can be sold here for about cost. The price we paid for coal last season was forty five cents per barrel; or four dollars and 50 cents per ton. We think the market will open at about the same rate next fall. The steamers offer to take one thousand tons per month, or twelve thousand tons per annum. And you may have some idea of the magnitude of the trade, in its infancy, when we inform you that the consumption of coal in Mobile for domestic purposes; (embracing Alabama, Liverpool, and Anthracite descriptions,) is but little over one thousand tons per annum; and yet we have delivered the English steamers in a few months the amount required for our city consumption for one year. In addition to the demand for the English steamers, there are several lines of steamers now in operation in the Gulf, and others to go in operation within two years—and they look to Mobile for their supplies; because it is well known, that this State can furnish coal far cheaper than any other port in the Gulf."

From another article in the Tuscaloosa Monitor, some further data are given of the cost of procuring this coal and its quality. From these data, given below, we infer that much of the coal has been collected merely from the surface, the flat horizontal beds lying often near the top of the ground over large areas. Coal thus taken from the outcrop is always dirty and smutty, however good the quality of the stratum when followed beneath a rock roof.—If such is furnished to the steamers, we should not be surprised to hear of their abandoning its use.—The Tuscaloosa coal is highly bituminous, and consequently very free burning; we have seen specimens of it perfectly sound, and apparently of excellent quality, though perhaps too bituminous for the most economical use where a good coking coal is required. The writer objects to the price of two cents per bushel for raising the coal by surface digging, which is a cheaper mode of obtaining it than by mining. The established rates of mining this kind of coal in Pennsylvania, and delivering at the mouth of the pit, is only a cent and a half a bushel. Here it is true there are plenty of miners, and the business has been long established. But in transporting the coal also from the mines to the river, a distance of two or three miles, the extraordinary rate of four or five cents a bushel, or $1 20 to $1 50 per ton, is given as the remunerating price. If the state of the roads or other causes render these rates necessary, the coal fields and iron ores of Central Alabama will not soon acquire the great consequence that their isolated position would, under other circumstances, insure them. H.

"Any party conversant with the system of coal-raising, and transportation from the neighborhood of Tuscaloosa to Mobile, must see that such a price (two cents a bushel) is much too little. The price of raising coal by surface digging, will generally be found to exceed 60 cents per ton, or 2 cents per bushel, hauling it two or three miles to the river, will be from four to five, and the expense to Mobile will be equal to seven cents per bushel, leaving the raiser a profit of one cent per bushel, without any deduction whatever for the risk of loss on the passage, to which such a frail craft as a flat boat is greatly exposed.

Although coal may doubtless be raised by mining to an extent much larger than by the present system, and the article will be much superior yet the expense is equally as great, if not greater, and this is in a great measure owing to the difficulty (I should say impossibility) of procuring men acquainted with mining coal. The best coal is beyond doubt that which is procured by mining, but unless a greater price than $4 50 can be obtained at Mobile, no parties with any capital can ever embark in the Alabama coal trade with any fair prospect of success—large coal should always at least command $6 50 per ton. Were a proper understanding existing between the raisers of coal, no doubt a remunerating price might be obtained, in which case a great deal of *trash* now sent, would be excluded from the market, and the coal would have its fair character, that is, of being equal to the best English coal which is sold at Mobile and at the West Indies at $8 per ton.

The "calling" of the West India Royal Mail steamers has had no beneficial effect on the price of Alabama coal, but on the contrary, the present prices have discouraged many parties from embarking in the business of raising coal, as it is a well known fact, that prior to the arrival of British steamers at Mobile, Alabama coal always brought 20 cents per bushel. In conclusion, Mr. Editor, I beg respectfully to suggest that a meeting of all parties concerned in the raising of coal, be held at some convenient place, when the prices and mode of sale, either by weight or measure, will be agreed upon, as there exists a great difference in the weight of coal from various places in this vicinity.

The Resources of Indiana and Ohio.

A number of a new paper started at Cannelton, Indiana, called the Economist, has lately been sent us, which contains an interesting address by Hamilton Smith, Esq., of Louisville, Ky., on the resources of Indiana. We have also other articles from this gentleman in the pages of the Louisville Journal, devoted to the subject of western manufactures, which he treats with great ability, and with unusual familiarity with the details of various operations, both in this country and abroad; while in the discussion of general principles, and of the duties of legislative bodies, a liberal policy is advocated, which (it may be for sufficient reasons) has not hitherto found general favor in the measures of the governments of the western States. The duty of Legislatures he conceives is to provide the people not merely with elementary school education, "but to furnish them such information, as will enable them to use their time and positions most productively. The way being pointed out by those placed in authority, associations in freedom of action will accomplish with us, what despotic governments fail to effect." In the State of Massachusetts, individual capital and labor began to associate in 1833, to construct railroads. The Emperor of Russia put his laborers to the same work in 1836. The little State has made a net work of railroads through all her valleys, while the single line of the autocrat is yet incomplete. Since 1836 our twenty millions of people, by their associations, have made over 7,000 miles of railroad. Europe, with her population of 338 millions, has in the same time constructed less than 10,000 miles; and the largest part of these has been the work of individual companies.

But while the government need not be called to aid in the construction of a railroad, the building of a manufactory, or the opening of a mine, it is not less its duty to gather and publish all the facts bearing on the road, the profits of the manufactory, the importance and position of the mine. The individual hesitates to incur the expenses of surveys and experiments, because the road may not come near him, and the ore may be of better quality on his neighbor's land. The association cannot be got up without a fair prospect of success. But the State has broader lines, and the expenses of her surveyors, geologists and chemists, divided among the many are not felt." The author then endeavors to impart some of this information himself for the benefit of Indiana; though he makes no pretensions to the possession of other than that of a general character. The great western coal field, whose eastern border is along the western counties of this State, receives a large share of attention properly merited; for this bituminous coal formation is underlaid like the one reaching from Pennsylvania into Ohio, by important beds of iron ore, which come up to the surface around its margin, and which at many points on navigable waters, and in close proximity to the beds of coal and fine forests of wood present facilities for the manufacture of iron, and its cheap shipment to the remotest markets rarely surpassed. Cannelton, we believe, is one of these points; and we hope we may be able to furnish before long accurate details of its mineral resources.

In the Louisville Journal, mention is made of the laying out of a new town in Lawrence county, Ohio on the banks of the Ohio, called Ironton, designated as a shipping port for a number of blast furnaces, which are located in the adjoining counties. No less than nine are named, which will at once send their pig metal and castings to this port. These are—

The Hecla,	owned by	H. Blake.
" Lagrange,	"	Iron and Coal Co.
" Vesuvius,	"	Dempsey & Co.
" Etna,	"	Dempsey, Rogers & Ellison.
" Lawrence,	"	Culbetson, Means & Co.
" Center,	"	Hamilton, Rogers & Co.
" Mt. Vernon	"	Campbell, Ellison & Co.
" Buckhorn,	"	Willard, Seely & Co.
" Olive,	"	Campbell, Peters & Co.

The counties of Jackson, Lawrence and Scioto are famous for their iron manufacture. There are nearly if not quite 40 blast furnaces in operation, some of which are run with bituminous coal with a small proportion of charcoal. Using the kidney ores of the coal formation, and the siliceous ores found in bands, they make a cheap quality of iron suitable for castings rather than for pig. At Hanging Rock, however, some good bar and sheet iron is also manufactured. The whole amount of the production of pig iron is, according to the opinion expressed to me by Prof. Mather, about 5000 tons per annum. Even with the investment of a little capital, the business has hitherto proved very profitable, as the paper of Mr. Smith seems fully to prove. Farther in the interior there are other furnaces, some of them running with bog ores. But both in this State and in Indiana, the principal points

for the manufacture must always be near the margin of the two coal fields and on the navigable waters, or where railroads or canals afford equally cheap modes of transportation. H.

British North American Mining Company.—We are informed that at the Quarterly Meeting of the Stockholders of the British American Mining Co. on Friday last, it was resolved to suspend operations at the Company's Mines on Lake Superior during the present winter, as much difficulty was anticipated, in the existing state of the money market, and the political aspect of the country, in getting in adequate sums for the vigorous prosecution of the works. We at the same time understand the confidence in the character of the mine has not abated, and that the enterprise will most probably be resumed soon after the annual meeting next spring.—*Montreal Gazette.*

TO UNITE WROUGHT AND CAST IRON.

A cast iron and wrought iron beam may be unified by immersing the wrought iron beam in weak nitric acid; and then make it red hot, and plunge it into the weak bath of nitric acid again and free it from all the oxide that is upon it. It is then dipped in a weak solution of sal-ammoniac and immersed in a bath of melted tin until it is well tinned all over. It is then coated, where it has been united with the cast iron, with an alloy composed of copper 5 parts and tin 95 parts. It is then placed in a mould and made fast with tinned nails, when the cast iron in a molten state is poured into the mould, and a fusion takes place between the wrought and cast iron through the action of the interposed alloy. Steel and cast iron may be united in the same way. —*Portland Inquirer.*

IMPORTANT INVENTION.

Woven Iron.

Messrs. Wickershaw & Walker of Philadelphia, have a patent right for the manufacture of woven iron. This improvement does away with the necessity of pivots for the purpose of fastening iron work together where it is used for grating of any description. The manufacturers are enabled to weave iron as large as railroad bars, or the smallest description of wire. they are now applying it to the following purposes: iron railings of endless varieties, embracing beauty, strength and style of finish never surpassed, for public grounds, buildings, cottages, verandahs, lawns, cemeteries, etc., iron bridges, galleries for churches, gratings for prisons, window shutters, and grating for stores, columns, and cornices for cottages, tree boxes, summer houses, guards for decks of steamboats and vessels etc., being cheaper than wood or cast iron—*Journal of Com.*

Indiana.

Railroads at Indianapolis.—We learn from the Indiana Sentinel that the joint committee, composed of committees from the Madison, Terre Haute, Peru, and Bellefontaine Railroad Companies, met at this place on Wednesday last, and united in recommending to their respective companies, for confirmation, the construction of a union double track, of heavy T rail, connecting the several depots with each other; in effect constituting each line a continuation of every other, as to the transit of through freight and passengers. It is further anticipated, as we learn, hereafter to establish a joint *passenger* depot, on the joint track, for the accommodation of the passengers on all the lines.

Massachusetts.

Essex Railroad.—An adjourned meeting of the stockholders of the Essex railroad was held at Salem on Monday. The President made a report, stating that the efforts of the Directors to obtain subscriptions to the bonds had succeeded beyond expectation among the stockholders, and that there was little doubt but nearly all would be taken. The accounts for the three weeks which have elapsed since the re-opening of the road are as follows: Receipts, $1,250 51; expenses, $215 98. The Directors were empowered to keep the subscription book open till the 1st day of September.—*Boston Atlas.*

South Reading Branch Railroad.—A meeting of the subscribers to the stock of this Corporation, was held on Tuesday, at Ashland Hall, in Danvers, for the purpose of organizing and electing a board of directors. L. Allen, Esq., was chosen moderator, and Geo. Osborne, Esq., clerk of the meeting. The following board of directors were elected:—David Pingree, Thomas P. Pingree, Edward Crane, William Sutton, George Osborne, Thomas Emerson, and Elijah W. Upton. The capital stock of this Company is $200,000, of which $150,000 is subscribed. It is to be commenced immediately, and it is expected it will be finished next spring. About seven and a half miles are required to be built, from Danvers to South Reading, there uniting with the Boston and Maine Railroad, and finishing the communication to Boston. At a meeting of the directors, David Pingree, Esq., of Salem, was chosen President.—*Boston Atlas.*

Ohio.

We give below a statement of the net receipts of tolls upon the public works of the state for the first three quarters, ending August 15th, 1849, also for the corresponding period of 1848, showing an increase in this year over last to the amount of $56,057 22.

	Received during the 1st 3 qrs. in 1848.	Received during the 1st 3 qrs. in 1849.
Ohio canal	204,004 11	225,978 85
Miami and Erie canal.	177,308 91	197,734 47
Muskingum Improve.	20,140 94	33,511 43
Hocking canal	4,438 70	4,460 61
Walhonding canal	644 68	909 20
	406,537 34	462,594 57
		406,537 34
Increase in 1849		$56,057 22

The American Association for the Advancement of Science has just closed its annual session—which this year was held at Cambridge, Mass. Seldom has so large a number of our most distinguished scientific men met together as were congregated during the week at Cambridge; and never were so many papers presented to the attention of the association.

The Coast Survey particularly was well represented; and from Prof. A. D. Bache, its most distinguished head, a most interesting account was given of its progress and present condition, an abstract of which we regret we cannot lay before our readers.

The Geological Department was represented by Prof. Agassiz and Guyot of Cambridge, Prof. H. D. Rogers and Dr. C. T. Jackson of Boston, Prof. Hall of Albany, Messrs. Hunt of Canada, Moss of Philadelphia and Hodge of New York.

Communications were received from these gentlemen, which have been published in the daily papers, or will appear in the Transactions of the Association.

Many papers were read of mathematical and astronomical interest, one of which we transfer to our pages as we find it reported in the New York Tribune:—

A newly discovered Analogy in the time of Rotation of the Planets: By Daniel Kirkwood, Esq., of Pottsville—in a letter to, and read by Mr. Sears C. Walker. Mr. Kirkwood's letter, in which he mentions in detail some of his observations and their results, is as follows—copied entire because it may hereafter be valuable as matter of reference:

Pottsville, Pa., July 4th, 1849.

Sears C. Walker, Esq.—Dear Sir: Knowing the great interest you feel in Astronomical inquiries, I take the liberty of submitting the following paper to your consideration, respectfully soliciting your opinion as to the problem which I have been attempting to solve. * * Wishing to be as brief as possible, I would not trouble you at present with any statement of considerations which suggested my hypothesis.

While we have the law of Kepler, a bond of mutual relationship between the planets, as regards their revolutions around the sun, it is remarkable that no law regulating their rotations on their axes has ever been discovered. For several years I have had little doubt of the existence of such a law of nature, and have been engaged, as circumstances would permit, in attempting its development. I have at length arrived at results, which, if they do not justify me in announcing the solution of this important and interesting problem, must at least be regarded as astonishing coincidences.

Let P be the point of equal attraction between any planet and the one next interior, the two being in conjunction P′, that between, the same and the one next exterior.

Let also D = the sum of the distances of the points P, P′, from the orbit of the planet; which I shall call the diameter of the sphere of the planet's attraction; D = the diameter of the other planet's sphere of attraction found in the like manner; N= the number of siderial revolutions around the sun; N′ = the number performed by the latter; then it will be found that

$$N^2 : N'^2 :: D^3 : D'^3 ; \text{ or, } N = N' \left(\frac{D}{D'}\right)^{\frac{3}{2}}.$$

For the sake of convenient reference I subjoin the following tables. The masses of Venus, the Earth, Mars, Jupiter and Saturn, are taken from your edition (1845) of Sir John Herschel's Treatise on Astronomy. Those of Mercury and Uranus correspond with my hypothesis, and are nearly identical with the most recent and reliable determinations of Astronomers. In other words, the mass of Mercury is very nearly a medium between the two estimates of Encke,* while that of Uranus is more than seventeen-eighteenths of Struve's mass (1-26860), found by observations on the satellites. The mean distances not being given in miles in Herschel's Treatice, I have used the table of distances in the Astronomy of Prof. Norton. For Mars' period of rotation (24h. 37m. 20 6s.) I have adopted the recent determination of Prof. O. M. Mitchel:

TABLE I.

Planet's name.	Mean Dist. from Sun in miles.	Mass.	Sq. Root of Mass.	No. Rots. in one Sid Pe'od
Mercury	36,814,000	277,000	526.3	87.63
Venus	68,787,000	2,463,836	1569.6	230.9
Earth	95,103,000	2,817,409	1678.5	366.25
Mars	144,908,000	392,735	426.7	669.6
Jupiter	494,797,000	953,570,222	40879.8	10471.
Saturn	907,162,000	284,738,009	16874.1	24620.
Uranus	182,429,000	35,186,000	5931.5	

The corresponding logarithm to be added to the above table is as follows:

	Log.
Mercury	1,942653
Venus	2,363424
Earth	2,563777
Mars	2,825815
Jupiter	4,019988
Saturn	4,491288
Uranus	

The points of equal attraction between the planets severally, (when in conjunction) are situated as follows:

TABLE II.

Between Mer. & Venus	8,029,600	23,943,400
" Venus and Earth	12,716,600	13,599,400
" Earth and Mars.	36,264,600	13,540,400
" Jupiter & Saturn	266,665,000	145,710,000
" Saturn & Uranus	678,590,000	238,538,000

It will be seen from the above that the diameter of the Earths' sphere of attraction is 49,861,000 miles. Hence the diameters of the respective spheres of attraction of the other planets, according to my empirical law will be as follows:

DIAMETER OF SPHERE OF ATTRACTION.

		Log.
Mercury	19,238,000	1.283704
Venus	36,560,000	1.501218
Mars	745,600,000	1.872479
Jupiter	466,200,000	2.668594
Saturn	824,300,000	2.916127

Remarks.—The volumes of the sphere of attraction of Venus, Mars and Saturn in this table correspond with those obtained from table II; that of Mars

extending sixty-one millions of miles beyond his orbit, or 206,000,000 miles from the Sun. This is about two or three millions less than the mean distance of Flora, the nearest discovered asteroid.—That of Mercury extends about eleven millions of miles within the orbit. Consequently, if there be an undiscovered planet interior to Mercury, its distance from the Sun according to my hypothesis, must be less than twenty-six millions of miles within his orbit, leaving 89,000,000 miles for the asteroids. It is only in the most distant portion of this space, where small bodies would be less likely to be detected, that none have yet been discovered.

The foregoing is submitted to your inspection. * When it is considered that my formula involves the distances, masses, annual revolutions and axial rotations of all the primary planets in the system, I must confess I find it difficult to resist the conclusion that the law is founded on Nature.

Yours, very respectfully,
DANIEL KIRKWOOD.

Mr. Walker remarked that he had verified Mr. Kirwood's hypothesis, using the most recent elements of the solar system, and that he was induced to agree with Mr. Kirkwood that a formula which represented the length of the days of the primary planets, must be founded on a law of Nature.

Mr. Walker observed also, that in the department of the analogies of the Solar System, no discovery of equal interest or importance had been made during this century; and that, in his opinion, Mr. Kirkwood's name would in after time be placed by the side of that of Kepler, as the discoverer of a law which for the *days* of the primary planets bore a close resemblance to the third immortal law of Kepler for their *years*.

After this communication, several of the members of the Physical Section spoke in terms of admiration of the discovery.

On the 21st, Dr. Gould addressed the Association on the same subject. He had made independent compunctations confirmatory of those of Mr. Kirkwood and Mr. Walker.

The formula of Mr. Kirkwood may be thus stated:

"The square of the number of a primary planet's days in its year, is as the cube of the diameter of its sphere of attraction in nebular hypothesis."

The members generally expressed the opinion that La Place's nebular hypothesis, from its furnishing one of the elements of Kirkwood's law, may now be regarded as an established fact in past history of the Solar System.

The Georgia Burr Mill Stones.—The stone most commonly used for grinding wheat, is known by the name of "French Burr," because they are imported from that country. This species of stone is a porous silicious mineral, so very hard, that a pair of mill stones will last quite a number of years at full work, without being worn out. The French burr stones, owing to their great price, has from time to time stimulated both the Americans and the English, to many efforts to supersede them. During the last war between France and England, when it was impossible to get burr stones, the London Society of Arts offered a premium of a gold medal, or one hundred pounds for the discovery of a quarry producing stones equal to the French Burrs.

A quarry was discovered in Wales with stone similar to the French, and answered tolerably, but they were not equal to the Erench. A number of mases of rocks were also discovered at Stirling, Scotland, and made into stones, some of which indeed gave better satisfaction than the French burr, as they were of a more even texture, but the French stone still carried the bell. In our country a substitute for it has long been a desideratum. This has now been obtained. In Burke County, in the state of Georgia, a large quarry embracing an area of 17,000 acres has been discovered; and a Company named the La Fayette Burr Mill Stone Company, has been formed to work it and furnish American Mill Stones equal to the French Burr.—The principal office of this Company is in Savannah. About 1000 sets of stones have already been put up, and are now in operation, and some of them alongside of the French, where in every instance they have equalled—and a little more, the very best French Burrs. Samples of this stone have been in our office for some time. We have contrasted them in every way with French burrs, from which without knowing that the one came from France and the other irom Georgia, no person could point out a difference. Those who have used the Georgia stone, prefer it for a more enduring fine sharpness, and in that case, it is more economical to use.—From what we have seen of the Georgia stone, and heard about it from the most respectable sources, respecting its practical results, we are confident that the quarry must be of immense value.

The New York Iron Bridge Co.

LATELY KNOWN AS
Rider's Patent Iron Bridge Co.

THE Company which has hitherto furnished these Bridges, under the patent granted to the late Nathaniel Rider, deceased, have become satisfied that all the principles embraced in their construction, are included in a previous patent, granted in the year 1839, to Col. Stephen H. Long, of U. S. Engineers, and by him designated as "Long's Suspension Bridges," and have therefore made an arrangement with Col. Long, by which they have secured the exclusive right to make and vend these Bridges throughout the whole United States.

The only change consequent upon the new arrangement will be found in the name and style of the Company. The parties composing it being the same, the construction of the Bridges will be essentially the same.

August 4th, 1849. M. M. White, Agent,
au7tf No. 74 Broadway, New York.

Hudson River Foundry,
THOMAS & COLLIR,

130 Quay Street, Albany.

NOTICE TO
Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York.
34tf

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

FRANKLIN TOWNSEND & CO.
Albany, August 18, 1849,

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.
August, 16, 1849. 6m33

Notice to Contractors.

OHIO AND PENNSYLVANIA RAILROAD.

PROPOSALS will be received at the office of the Ohio and Pennsylvania Railroad Company, in the town of Massillon, Stark county, Ohio, until sunset of Friday, the 28th of September, 1849, for the Grading and Masonry of the line between Canton and Wooster, a distance of about 32 miles. Proposals may be addressed to Wm. Robinson, Jr., President, or Solomon W. Roberts, Chief Engineer of the company.

Drawings and specifications of the work to be let will be exhibited at the office in Massillon, for a week before the letting, by Jesse R. Stranghan, the Resident Engineer of the Western Division.

By order of the Board of Directors.
WM. ROBINSON, Jr., President.
Pittsburg, August 11, 1849.

To Contractors.

SEALED PROPOSALS will be received until 12 o'clock, noon of Monday, the 3d day of September next, for grading, bridging and laying the superstructure of the road on all those sections embraced in the first division of the railroad, extending from Milwaukee to Waukesha 19 miles.

Plans and specifications can be seen at the office of the company, at any time after the 25th inst., between the hours of 9 a.m. and 5 p.m.

BYRON KILBOURN, President.
Milwaukee, August 6, 1849.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected,

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
C. CROZET,
Engineer Blue Ridge Railroad.
Brooksville, July 26, 1849,

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to orignal communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumees annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procuration of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

☞ The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; *Deeds, Conveyances, Agreements, Assignments*, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Offic, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Engine and Car Works,

PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of $250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Bullder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

BUSINESS CARDS.

Samuel Kimber & Co.,
COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

To Railroad & Navigation Cos.

MR. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
Eagle River P. O. Lake Superior.

James Laurie, *Civil Engineer,*
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848. 6m*

James Herron, *Civil Engineer,*
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.

IRON.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to

J. F. MACKIE,
Nos. 85 and 87 Broad St.

New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. pe lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849, t

☞ The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2¼ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsherrie.
100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., *Philadelphia*

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, *Agents.*
17 Burling Slip, New York.

October 30. 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent,*
Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by

A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

Railroad Iron.

100 Tons 2½ x ⅝, | 30 Tons Railroad.

All fit to re-lay. For sale cheap by
PETTEE & MANN,
228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, *Civil Engineer,*
Pittsburgh, Pa.

These *Ropes* are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

½ Round and square, to 6 inches.
⅜ Flat 4 "
Ovals, half-ovals and half-round.
Hoop, band and scroll iron.
Nail plates, superior charcoal Horse shoe,
Iron, sheet and Boiler iron,
Tire iron for locomotives,
Railroad spikes.
Pig iron of superior quality for chilling.
do. for foundry purposes.

For sale by JOHN F. MACKIE,
85 & 87 Broad Street,
Sole agent for the New Jersey Iron Co,

June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street.

March 29, 1849. 3m.13

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,

Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces; Cold Blast* Charcoal Pig Iron from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra* strength; also *Boiler* and *Flue Iron* from the mills of Edge & Hilles in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300	Tons	A 1, Iron Dale Foundry Iron.		
100	"	1,	"	"
100	"	2,	"	"
100	"	"	Forge	"
400	"	Wilkesbarre	"	"
100	"	"Roaring Run" Foundry Iron.		
300	"	Fort	"	"
50	"	Catoctin	"	"
250	"	Chikiswalungo	"	"
50	"	"Columbia" "chilling" iron, a very superior article for car wheels.		
75	"	"Columbia" refined boiler blooms.		
30	"	1 x ¼ Slit iron.		
50	"	Best Penna. boiler iron.		
50	"	"Puddled"	"	
50	"	Bagnall & Sons refined bar iron.		
50	"	Common bar iron.		

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
64 South street
New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES. — The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Brother, Baltimore, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

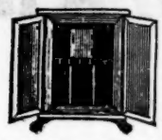
THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mial & Co., and superior to anything of the kind manufactured in England. For sale by G. T. SNOW,
109 Water Street, New York.

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.



Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.
August 24, 1848.

TO RAILROAD COMPANIES AND MANUfacturers of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.
May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

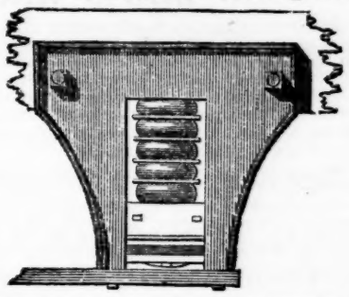
Large Pumps.

THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2¼ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.
May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by exparte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four yeas ago.

They claim the exclusive right to use Sprngs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was *granted in January last* to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having *tried to make* a spring which Mr. Fuller *did make* and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are refered to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs refered to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for adverting to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual refered to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but *from that hour to the present, not a single communication has been received from the said agent.* Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as specimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of *Mr. Knevitt* the Agent, at 38 Broadway New York, and of *Messrs. James Lee & Co.*, 18 India Wharf, Boston.
May 26, 1849.

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Balttmore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupyidg but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet,)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,
Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.
Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the *parallel ruler, plane scales* and *protractor.*

2d. Examples for drawing *plans, sections* and *elevations* of Buildings and Machinery, the mode of drawing elevations from *circular* and *polygonal* plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Examples for the projection of shadows.

The whole illustrated with 50 STEEL PLATES.
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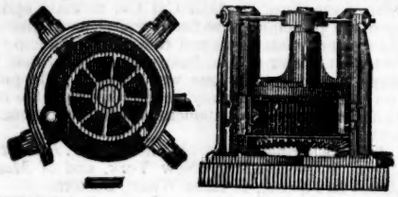
Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

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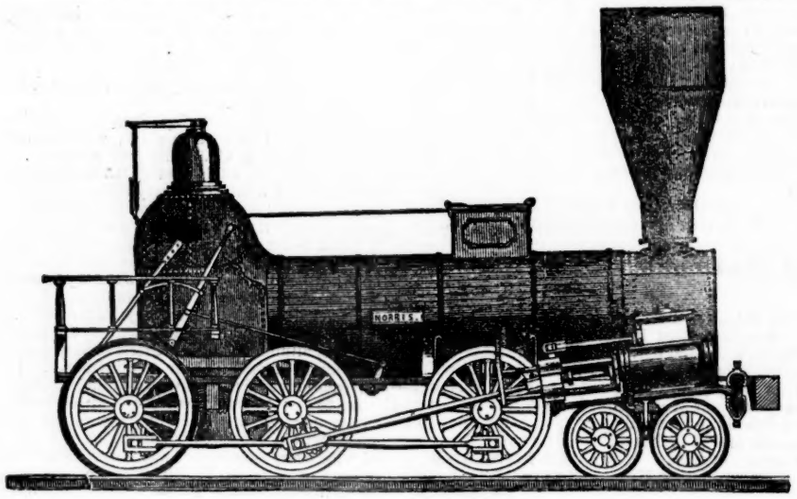

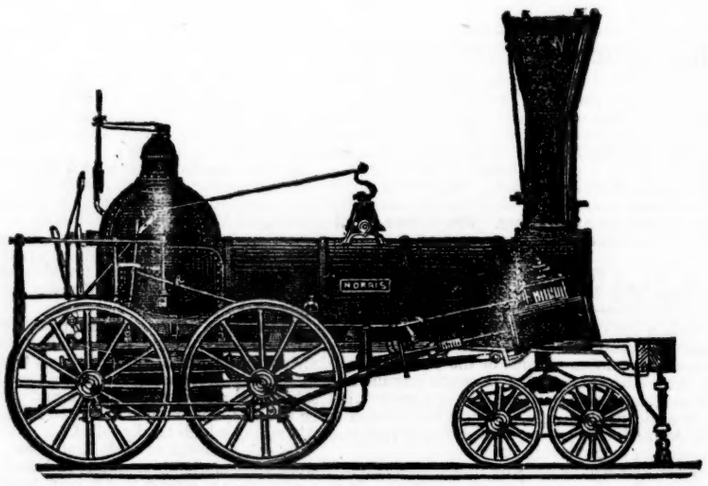

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